ANGLAIS

PORTABLE MOTOR IMPACT WRENCH

Type

MIW.2

GEISMAR, the quality choice !

You have just acquired a machine for laying and servicing railway lines. We thank you for choosing equipment developed and constructed by GEISMAR / STUMEC, the fruit of over eighty years' experience.

Every day since 1924, the GEISMAR Group has been investing in research and state-of-the-art construction to offer you the quality and reliability so essential to the requirements of the world of railways.

This machine, built entirely in France from design through to delivery, has been subjected to continuous, extremely strict controls. Formed of different mechanical elements assembled by highly qualified fitters, your machine has been tested, calibrated and controlled at every stage of its production.

We are convinced that it will give you every satisfaction and are, of course, at your service to offer you any recommendations you may require for its use or its maintenance.

We thank you for the confidence you have shown in us and, in the hope that we will remain one of your privileged partners, we would like to confirm that we are totally available for any comments or recommendations you may care to make.

In accordance with our environmental safety policy, this manual has been printed on recycled paper.

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CHAPTER 1 – SAFETY

1.1 Foreword

The following set of rules has been drawn up to ensure the application of precautionary principles that help to preserve the safety of persons and property when the machine is in use. Any failure to comply with these rules can have serious repercussions (bodily injury, etc.), and can even be fatal, so we must draw your attention to the fact that all persons involved in the use, maintenance, storage or custody of the machine covered by the present manual must be familiar with these rules.
Any users who cause an accident through failure to comply with these rules will be held personally responsible for the results of their actions.

1.2 Instructions for safety and general use

All persons using, servicing or repairing this equipment must have undergone the training, possess the skills, and have at their disposal the tools necessary to carry out any such operations.
Before using the equipment, even in a maintenance context, it is necessary to read the corresponding instruction manual, together with its appendices, and the safety rules in force in the workplace.
Comply carefully with the general safety instructions drawn up for the site by the person in charge of the site, especially if the work is carried out without stopping or diverting traffic.
The equipment can only be used, serviced or repaired by competent personnel who have undergone thorough specialized training beforehand. The technical documentation and the instructions are useful in completing the knowledge acquired during the training courses, but they can in no way replace theoretical and practical qualifying training, provided in accordance with good professional practice.
If the operating company is not in a position to carry out the necessary training for its staff, at a satisfactory level, the GEISMAR/STUMEC Company is able to provide advice concerning the training programme to be implemented.
The training must include an explanation of the various equipment functions, the instructions for use and maintenance, and the safety rules applicable, together with practical exercises.

IMPORTANT! All persons using the machine must comply with the labour regulations in force

The GEISMAR/STUMEC Company cannot be held responsible for any modifications made without its written approval, or for any assembly work not in conformity with its recommendations, especially in the case of use of parts other than original manufacturer's parts.

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1.3 General safety instructions

- The operator and the working environment

⇨ To avoid all risks of accident or injury, it is essential to wear:
- Sturdy, non-flammable clothing that is suitably close-fitting
- Strong, non-slip gloves
- Safety shoes
- Protective eyewear
- Safety helmet
- All other equipment necessary on the site or when using the machine

⇨ In the case of use of ear defenders, the safety instructions in force on the site must be complied with at all times.

⇨ Make sure that the machine vibrations do not lead to a loss of sensitivity in the hands. Adapt the working periods to the level of vibration caused by the machine, which is shown within the framework of normal use.

⇨ Do not work with the machine if you are not sure that you can control it correctly. Do not start working with the machine until you are sure that you can do so in full safety, for yourself (good conditions of visibility and lighting) and for other people (work calmly and carefully). Take care to ensure you have a firm, stable footing; all unstable working positions must be prohibited.

⇨ The user must be in a physical and mental condition enabling work to be carried out without danger.

⇨ The work area must be free of all obstacles. The work area (and the surrounding areas) must be free of all flammable substances.

⇨ If anything does not seem clear to you, whether it concerns the machine or the work to be carried out, ask a qualified person for information. Do not base your work on assumptions.

⇨ For underground use (tunnel or gallery), or in a closed area, make sure there is sufficient ventilation or extraction to avoid the risks generated by inhaling exhaust gases or by their build-up.

⇨ This equipment must not be used in an explosive atmosphere.

⇨ Avoid working positions in which exhaust gases could come into contact with parts of the body, whether protected or not.

⇨ In a general way, take all necessary precautions to prevent flammable products from coming into contact with fire hazards.

⇨ The operator must ensure that no one else is within the working area. In particular, it is necessary to make sure that in the direction in which the machine is travelling, no one can be hit. If someone is nonetheless in the path of the machine, the operator must stop and warn the person of his passage.

⇨ When the machine is installed on the track, it must be handled only by the number of operators strictly necessary for its normal use.

⇨ As the overall size of the machines does not enable extinguishers to be carried on them, we strongly recommend placing extinguishers of an appropriate type to deal with the fire hazards close to the machine.

⇨ The user must comply with all the regulatory environmental instructions applicable to the machine in use.

- The operator and the machine

⇨ Before putting the machine into service each time, check that its condition and its operation are in compliance with the instructions.
In particular, make sure that the controls are free and in good working order, and that they are in the “stop” or “neutral” position. Never make any modifications that could affect correct operation of the control systems.

⇨ All the protective elements must be kept carefully in place and in good condition.

⇨ Always keep the machine clean and remove any accumulated dust, especially if it could absorb flammable products.

⇨ Always move forwards when working.

⇨ When working, always hold the machine with both hands to ensure control at all times, and to be able to use it in full safety.

⇨ Never bring a machine close to a flame or a source of heat.

⇨ The machine must never be positioned close to hot or protruding elements that could damage some parts (tanks, exhaust, housings...).

⇨ Never move away from a machine while the engine is running, even when it is idling. Stop the engine immediately if the machine is not in use. After stopping the engine, wait until all moving parts have come to a complete stop.

⇨ Work on the electrical installations on the machine can only be carried out by suitably qualified persons.

⇨ Read and make sure you fully understand all the signs placed on the machine, and always comply with all the instructions.

⇨ The signs placed on the machine include pictograms, manufacturer’s plates, and instruction labels. Make sure they are kept clean and replaced if they have been damaged, or if they are missing or illegible. If one of these elements is on a part that is to be replaced, a new element must be present on the replacement part. Please contact us on this subject.

THE MACHINE MUST NEVER BE USED FOR A PURPOSE OTHER THAN THAT FOR WHICH IT IS INTENDED

NEVER TOUCH A MOVING PART WITH A TOOL, OR WITH THE HAND, OR WITH ANY OTHER PART OF THE BODY

IT IS **ESSENTIAL TO STOP THE ENGINE** AND SET THE CONTROL TO THE STOP POSITION BEFORE CARRYING OUT :

- ANY **HANDLING** WORK
- ANY WORK TO **CHANGE TOOLS OR SOCKETS**
- ANY **WORK INVOLVING FUEL** OR **OIL** (FILLING, TOPPING UP, CHECKING LEVELS, ETC.)
- ANY **REPAIR, MAINTENANCE OR CLEANING** WORK

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- Using and handling fuel and oil

⇨ It is essential to stop the engine and set the control to the stop position before carrying out any work involving fuel (filling up, checking the level, draining, etc.).

⇨ Always keep suitable extinguishers ready for use in all areas where fuel is handled (storage, filling up, etc.).

⇨ Always store fuel and oil in separate cans specially designed for the purpose and bearing the labels required by regulations. They must be stored in a safe place, well away from all types of fire hazard.

⇨ Each time a machine is started up, and while it is running, make sure that there are no fuel leaks from any part of the machine. If a leak is suspected, stop the engine immediately and do not restart the machine until the leak has been repaired.

⇨ Never carry out any work on a fuel tank or handle fuel to fill a tank, or for any other reason, in an area where there could be a fire hazard (such as a burning cigarette, a blowtorch, sparks, etc.) or substances that are incandescent or at a high temperature (such as welding spatters, slag, clinker, etc.). All such work must always be carried out outdoors or in a well-ventilated area.

⇨ Always turn all mobile phones off while filling a tank with fuel or handling fuel.

⇨ Carefully tighten the fuel filler cap each time, and check that no fuel leaks from it.

⇨ Always remove a filler cap slowly, to enable any internal pressure to be released without spraying any fuel out. Take special care if the surrounding temperature is high.

⇨ When putting fuel in a machine that has heated up, never fill the tank completely. Do not put in more than three-quarters of the tank capacity.

⇨ If fuel starts to boil in the tank when putting fuel in a machine that has heated up, screw the cap on again immediately and leave the machine to cool down.

⇨ Make sure the fuel used is suitable for the type of engine on the machine. See the user manual for the engine.

⇨ Do not inhale fuel vapour.

⇨ If it is necessary to drain the fuel tank, pour the fuel into a container designed for the purpose and bearing the labels required by regulations. Always close them tightly, even if they only contain a small quantity. Never use a glass container.

⇨ Never use fuel for cleaning work. Use only non-flammable, non-toxic products that are harmless for the user, the equipment and environment.

⇨ If fuel has been spilt near the filling area for any reason, clean it up immediately. Clean straightaway any spillage of fuel on the skin. Make sure no fuel has been spilt on your clothes; otherwise, change clothes immediately. Remove all rags or other materials used to wipe fuel, and store them in a safe place well away from all sources of heat or combustion. Move the machine well clear of any spilt fuel before starting it up (at least 6 metres away), and do not move any closer to the area while the engine is running.

IN CERTAIN CASES HANDLING OIL CAN GIVE RISE TO THE SAME TYPE OF RISKS AS HANDLING FUEL. IT IS THEN ESSENTIAL TO TAKE THE SAME PRECAUTIONS WITH OIL AS THOSE SET OUT ABOVE FOR FUEL.

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- Tools to be used on the machine

  ⇨ Use only the types of tools intended for normal use of the machine.

  ⇨ Measure the speed of all rotating tools at regular intervals.

  ⇨ Never use tools at speeds greater than the maximum speed for which they have been designed and approved.

  ⇨ Never use damaged tools or tools that have reached their maximum level of wear.

- The engine on the machine

  ⇨ Never touch the hot parts of the engine, and especially the exhaust pipe. If it is necessary to work on the engine, wait until it has cooled down.

  ⇨ Check the engine rotation speed at regular intervals, and especially after fitting tools or reassembling the machine. Adjust if necessary.

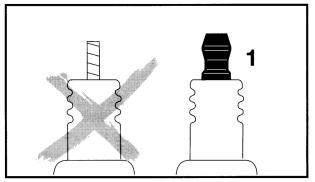
  ⇨ Never exceed the speed shown in the technical specifications.

  ⇨ After starting with the choke, remember to return the choke to the normal running position.

  ⇨ Never wind the starter rope around your hand, and never release it suddenly.

  ⇨ If the machine does not operate correctly after the engine has been started, stop the engine and inform the head of maintenance.

  ⇨ For petrol engines, use only spark plugs whose tops are as shown in drawing 1 opposite. If the plug is fitted with a screw top, make sure the top is fully tightened. After fitting the spark plug, make sure that the plug cap is in good condition and that it stays firmly on the plug. Carefully check the fastening system to make sure that no sparks can be formed.



- Using trolleys (If applicable)

  ⇨ A machine designed to work on a trolley must not be used without the trolley. The trolley is thus an integral part of the machine. The machine and the trolley must not be used separately.

  ⇨ Trolleys whose use is dedicated to a machine must never be used to transport equipment or personnel, or attached to a vehicle.

  ⇨ Before fitting the machine on its trolley, it must be placed correctly on the track to ensure that it can run freely. If it is on a sloping section of track, make sure the trolley is kept immobile while the machine is being put on the track or taken off it.

  ⇨ Attention, the trolley takes up the full width of the track and can cause injuries to the legs if it hits someone.

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1.4 Specific safety instructions

1.4.1 Risks that may arise when using "MIW2"-type portable impact wrench

The main danger that these machines may cause for the user and those around him are:

- ➡ Fire connected with fuel handling.
- ➡ Injury through incorrect socket attachment.
- ➡ Loose clothing becoming caught up in the sockets.
- ➡ Injury caused due to not keeping the machine in good working order.

- When changing sockets or accessories, never replace the pins with nails, iron wire, etc..., which might snag on and drag clothing? Always carefully put the dowel pin and spring retaining ring back in place.
- There are no control or handling parts located near the exhaust, so there is no risk of burns when used correctly. Nonetheless, in the event of special use, wait for the exhaust to cool down.
- While working, always hold the machine firmly with both hands.
- Carry out handling operations carefully and only when the engine is off. Be aware of the weight of the machine so that you can use the most appropriate action, in order to guaranty that all handling operations are carried out safely, and especially if it is difficult to access the worksite.

1.4.2 Individual protective equipment

- All personnel using this equipment must wear the clothing listed in paragraph §1.3 "General safety instructions / The operator and his environment".
- He must wear a helmet and safety boots with non-slip soles and steel toes.

- Use of protection to avoid inhaling the exhaust fumes is also recommended.

- Use of auditory protection is also recommended (**nonetheless, be sure to follow the applicable railway worksite regulation carefully in order to determine if this can be used or not**).

1.4.3 Fuel handling

- Clean around the filler hole to prevent impurities from entering the tank or damaging the priming plug sealing joint.
- Carefully open the fuel tank plug so that any excess internal pressure can escape slowly, without ejecting fuel.
- Never open the bayonet lock plug with a tool. You may damage the plug and fuel may escape.
- Only use unleaded petrol with octane number at, at least, 90 RON. **GASOHOL, METHANOL, ETHANOL and ALCOHOL are FORBIDDEN**. Using these products increases the risk of fire or explosion, and may cause serious, even fatal, injury to the user or those around him.
- As petrol is highly inflammable, make sure the machine is at least 6m from the filling site when starting it.
- Use a petrol-oil mix in the exact dose recommended in § 3.2.1 "Preparing the mix", in order to minimise the carbon deposits that may cause sparks in the exhaust.
- Regularly check that the fuel tank plug is properly sealed. Check the state of the O-ring on the filling plug. Replace it immediately if drops of petrol form.

1.4.4 Transport - Handling

- Never transport the machine with the engine running, even on idle.
- Only carry the machine using the tubular handle, with the shock mechanism pointing backwards.
- When transporting it in a vehicle, carefully fasten the machine to immobilise it.

1.4.5 Work

- The machine must only be used by a single authorised operator.
- The machine must be used **IN THE AXIS OF SCREWING**.
- If the work takes place on a double track, pay particular attention to activity on the track that is free to traffic. In all cases, use of the impact spanner must respect the railway recommendations applicable where the machine is being used.
- **This machine was designed and manufactured solely for screwing and unscrewing splice plate bolts and rail fastenings**. Any use other than that described in this manual will be considered «*non-compliant*" and will free the manufacturer of all responsibility; the user will be entirely and solely responsible.

  "*Compliant use*" presumes observation of the recommendations for use and maintenance of the machine stated in this manual. All recommendations for work accident prevention described herein must also be respected, while fully respecting the general applicable legislation governing safety and worksite health.
- Prior to operating, make sure it is in good working condition. Never modify the machine.
- Do not use ether or other similar products to assist in starting the engine.
- Do not work with the throttle device pushed in; it must only be used for starting.
- Stop the engine before undertaking any maintenance and repair operation. If the engine must operate (adjustment of the carburettor and check of the maximum light speed), make sure that the work space has lots of fresh air or is well ventilated.
- Never use a portable power bolter if the muffler is defective (risks of fire and hearing problems).
- As soon as the engine is running, it emits toxic exhaust gases. These gases can be odourless and invisible. Never work with the machine in closed or poorly-ventilated premises. When working in trenches, depressions or restricted areas always make sure there is sufficient ventilation. **Danger of intoxication**.

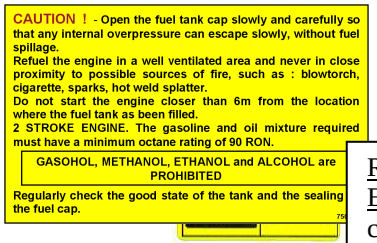
- Perfect adjustment of the engine idle is especially important so that the socket does not turn when the throttle trigger is at rest (refer to §5.1.4 "Carburettor" if an adjustment is necessary). NOTE: when the throttle trigger is released, the socket turns freely for a moment.
- If compressed air is being used for cleaning, wear protective clothing and a mask or goggles. The air pressure at the nozzle tip should be less than 2 bars.

1.4.6 Safety pictograms and recommendations

The safety pictograms and recommendations must be present on the impact spanner at the indicated location.

If one of them is missing or has deteriorated, another must be ordered immediately and installed in its place.

If a component bearing a label has been replaced, make sure a new label is placed on the replacement part.


CAUTION ! - Open the fuel tank cap slowly and carefully so that any internal overpressure can escape slowly, without fuel spillage.
Refuel the engine in a well ventilated area and never in close proximity to possible sources of fire, such as : blowtorch, cigarette, sparks, hot weld splatter.
Do not start the engine closer than 6m from the location where the fuel tank as been filled.
2 STROKE ENGINE. The gasoline and oil mixture required must have a minimum octane rating of 90 RON.
GASOHOL, METHANOL, ETHANOL and ALCOHOL are PROHIBITED
Regularly check the good state of the tank and the sealing the fuel cap.

Reference: N° **75022** (yellow)
Emplacement: stuck on the cowling to the top of the stopper of filling.

Reference: N° 12528 (yellow)
Emplacement: stuck on the cowling beside the handle of launcher.

CHAPTER 2 – DESCRIPTION OF THE MACHINE

2.1 General points

Manufacturer:	**GEISMAR / STUMEC** Route d'Italie 38110 LA TOUR DU PIN **FRANCE**
Description of the equipment:	Portable impact wrench
Type:	MIW 2

The "MIW2" model portable power bolter is designed to screw and unscrew sleeper screws, fish plate bolts and nuts. This machine is the most powerful on the market, so the most tightly screwed in components can be unscrewed on railway tracks.

Light and compact, it can be carried and handled easily by a single operator. The comfort of use, low vibration despite the high power and its durability make this machine the ideal tool for use on railway worksites.

The "MIW2" model portable power bolter works with a two-stroke air-cooled engine, centrifugal clutch and diaphragm carburettor and electronic starter.

Depending on the use it can be used horizontally for fish plate bolts and nuts or vertically for sleeper screws.

The MIW2 was developed in an exclusive partnership between GEISMAR STUMEC and STIHL. It is therefore the only portable power bolter to have a STIHL engine.

The "MIW2" is also unique in having efficient protection against flying ballast.

The "MIW2" has two handles for safe and easy handling both horizontally and vertically.

The "MIW2" has a standard 1" (1 inch = 25.4mm) drive chuck.

Lubrication is by oil bath, bringing a number of advantages:

- More even lubrication than with grease, which doesn't provide even lubrication of active areas of the mechanism.
- Good heat dissipation and dampening of the sound produced by the shock mechanism.

Filling and draining is through a magnetic plug that removes all metal particles from the oil.

For increased operator comfort, the power bolter can be used with support cart (optional).

2.2 Overview

Ref.	Description
A	Rear hand guard
B	Rear handle
C	Air filter cover
D	Front tube handle
E	Muffler with protective screen
F	1” (25.4mm) drive chuck
G	Shock device
H	Rotary speed reducer
J	Oil filling/draining plug
K	Oil level indicator
L	Front handle
M	Reversing lever
N	Air filter cover lock
P	Accelerator trigger lock
Q	Starting cable handle
R	Fuel tank plug
S	Start/stop universal lever
T	Accelerator trigger

2.3 Technical data

Machine dimensions		
Length / width / height…….....	mm	650/430/270
Weights		
Machine (empty) ……...…….....	kg	19
Machine (in operating condition).....…….....	kg	20,3
Cart (optional)…….....	kg	17.5
Noise **		
Acoustic pressure level (cutting) (La_{eq}) [1].....	dB (A)	102 (±2)
Acoustic power level (Lwa) [2]…….....	dB (A)	117 (±2)
Vibrations *		
Vibration level (au ralenti) (A_{eq}) [3].....	ms^{-2}	5,8 (±2%)
Vibration level (en frappe) (A_{eq}) [3].....	ms^{-2}	13 (±2%)
Estimated vibration level for 1 hr use over one 8 hr day (A_{eq}) [3].....	ms^{-2}	4,6 (±2%)
Machine		
Idle adjustment speed *…….....	rpm	2800
Tightening torque…….…….....	N.m	1850
Loosening torque…….....	N.m	2000
Socket at maximum engine speed.....	rpm	1350

Engine		
Type…….	……..	STIHL MS 290
Displacement……....	cm^3	56.5
Power (at 9000 rpm)…….....	kW	3
Cylinder bore…….....	mm	46
Max speed *...…….….....	rpm	12000
Piston stroke…….....	mm	34
Carburettor……..…...	……..	Membrane type carburettor
Work cycle…….....	……..	2 stroke at air flow
Cooling…….…….....	……..	Air
Ignition…….....	……..	Electronically controlled magnetic hand wheel
Spark plug (shielded)……...	……..	Bosch WSR 6, or NGK BPMR 7 A Electrode separation 0.5
Fuel tank capacity…….....	litre	0.560
Fuel (variable mix depending on oil used 1 :25 or 1 :50)....…….....	……..	Mix (oil – unleaded petrol)
Starting system…..…….....	……..	Automatic return starting cable Cable Ø 3.5mm, 960mm long

* These values are average values for a machine in good condition and can change from one machine to another.
[1] Measurements done according to NF EN ISO 11204 while machine working. [2] Measurements done according to NF EN ISO 3746 while machine working. [3] Measurements done according to NF EN ISO 5349 while machine working.

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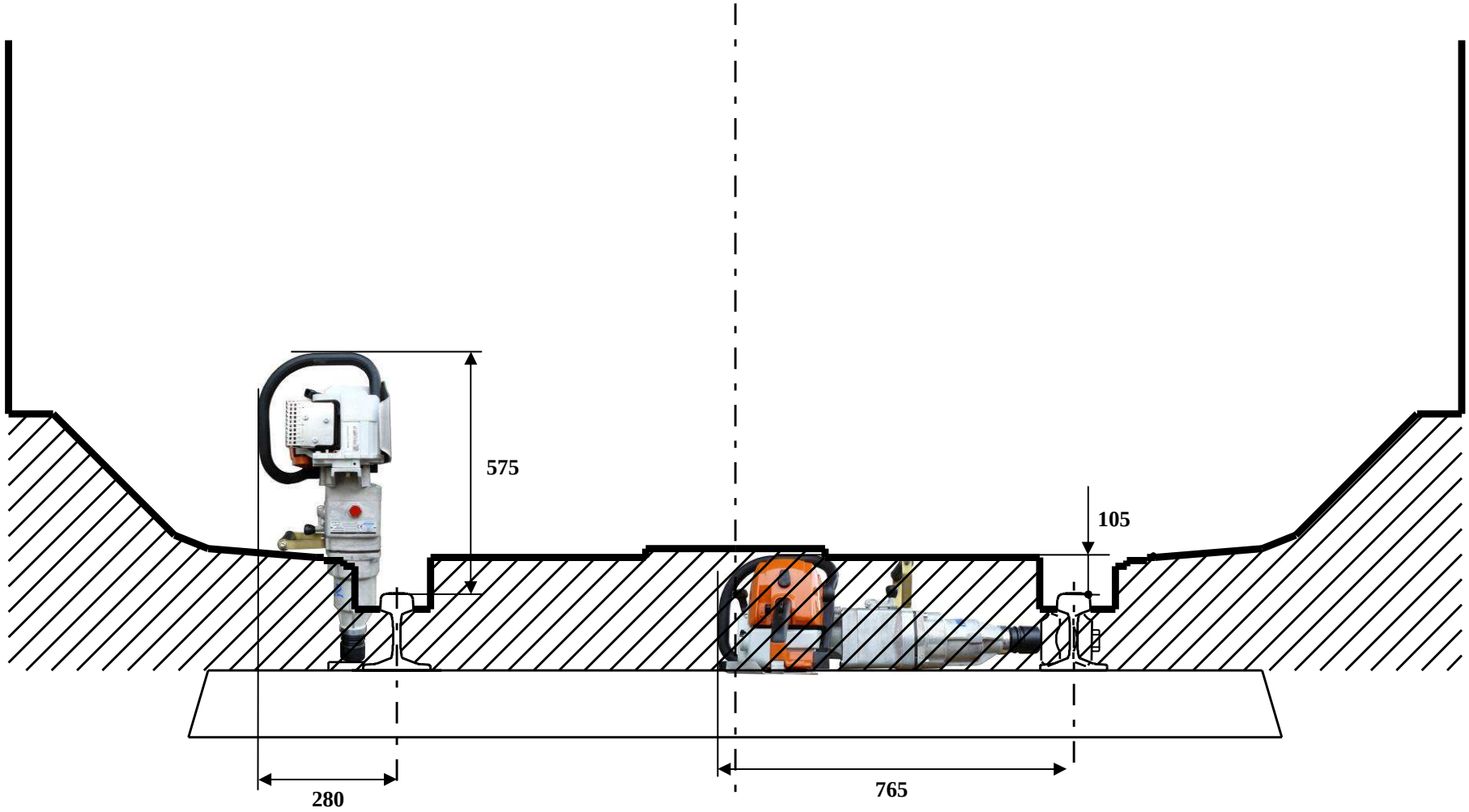
2.4 Location of the machine in the loading gauge

The diagram below shows the dimensions of the machine in relation to the low loading gauge UIC 505-1 (track with nominal displacement of 1435).

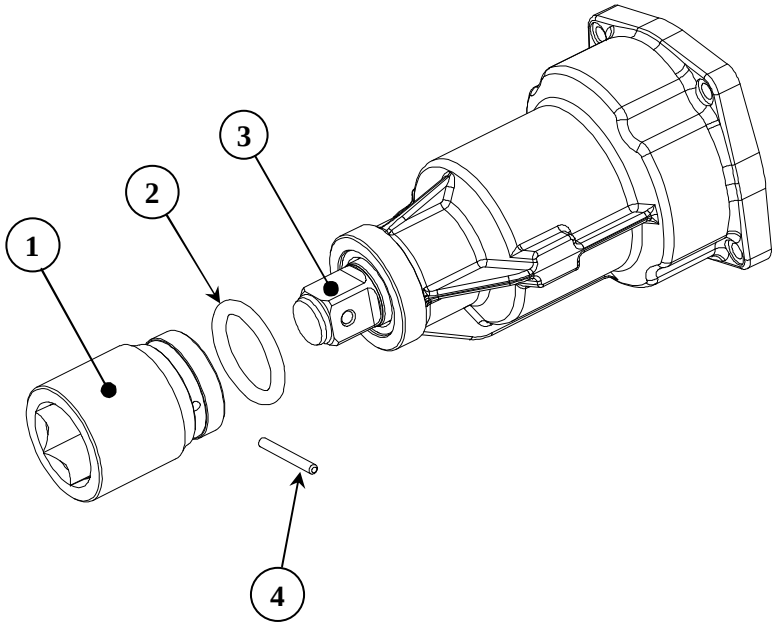


CHAPTER 3 – INSTALLATION – STARTING

3.1 Installing the socket

⚠ All socket mounting and dismantling operations must take place with the **engine off**.

⚠ When changing a socket, **never replace the dowel pin by a protruding object** (nail, wire, etc…), which may snag on and drag the operator's clothing, even cause injury. ***Always carefully put the dowel pin and spring retaining ring back in place.***



To install the socket, proceed as follows:

- Partially insert the spring retaining ring Ref.② in the socket slot Ref.①, to leave one of the two holes free for the pin Ref.④.
- Fit the socket Ref.① in the drive chuck Ref.③.
- Match up the sockethole Ref.① and the drive chuck hole Ref.③, then insert the dowel pin Ref.④.
- Then release the spring ring Ref.②.

- The output shaft has a 1" (25.4 mm) drive chuck (Ref. 56036). Use special bushes for impact wrenches (Size 32 to 42), with a 1" drive chuck and pin attachment (Ref. 56043) and spring retaining ring (Ref. FPR).

⚠ **Fitting a reduction bush decreases the machine's efficiency.**

3.2 Fuel

3.2.1 Preparing the mix

The two-stroke engine of the impact spanner must be powered by a mix of petrol and engine oil. The quality of these components and the mix ratio have a significant impact on the operation and the durability of the engine.

- *Fuel* ➥ Only use unleaded petrol with at least 90 RON.

GASOHOL, METHANOL, ETHANOL and ALCOHOL are FORBIDDEN.

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- *Engine oil* ➥ only use good quality oil for an air-cooled two-stroke engine. Preferably STIHL oil for two-stroke engines. It has been specifically developed for STIHL engines and guarantees extended engine durability. Do not use either oil for water-cooled engines or oil for four-stroke engines.

- *Preparing the mix* ➥ always prepare the mix in a clean and certified container for the fuel.

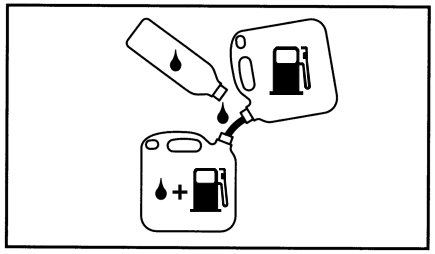
  ❶ start by pouring half the petrol to be mixed

  ❷ pour in all of the oil.

  ❸ mix the two by shaking the container.

  ❹ finally pour in the rest of the petrol.

  ❺ carefully mix them again before filling the tank.



Mix ratio:
- STIHL oil for two-stroke engines
➥ 1:50 = 1 volume oil + 50 volumes of petrol.
- other good quality oil for two-stroke engine
➥ 1:25 = 1 volume oil + 25 volumes of petrol.

Petrol	STIHL two-stroke oil 1:50 (2%)	Other quality two-stroke oil 1:25 (4%)
1	0.02	0.04
5	0.10	0.20
10	0.20	0.40
15	0.30	0.60
20	0.40	0.80
25	0.50	1.00

Units = litres

➥ *Storing the mix* ➥ the mix with unleaded petrol is not stable very long. Therefore do not prepare it ahead of time but as you need it.

3.2.2 Filling up with fuel

Before filling up, shake the mix can vigorously. ⚠ There may be pressure in the can. Open it carefully.

Before filling up, carefully clean the plug and the area around it so no impurity enters the tank.

Position the machine vertically, so the tank plug Ref.① is pointing up.

Never completely fill the tank, but only put in a quantity of fuel equal to ¾ of the maximum capacity.

Never fill the tank with the engine running

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- Opening the plug:

❶ By hand, raise the pull-down clip to a vertical position (Fig.1).

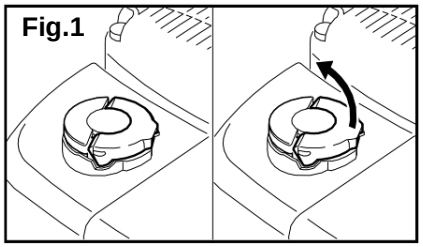
❷ Turn the plug at the base counter clockwise (approx. ¼ turn) (Fig.2).

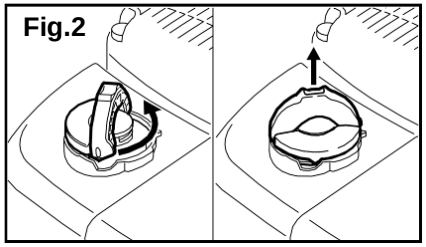
❸ Remove the tank plug.

⚠ Carefully open the fuel tank plug so that any excess internal pressure can escape slowly, without ejecting fuel.

⚠ Never open the plug using a tool. You may damage the plug and fuel may escape.

- Fill the tank in a well-ventilated area and never near possible sources of fire, such as: blow torches, sparks, soldering equipment.
  When filling, do not spill the fuel and never completely fill the tank. Never completely fill the tank, but only put in a quantity of fuel equal to ¾ of the maximum capacity.



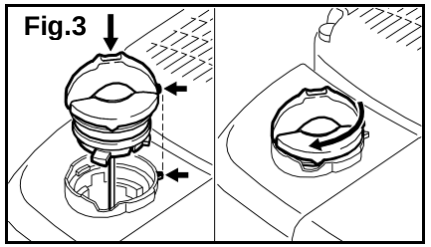


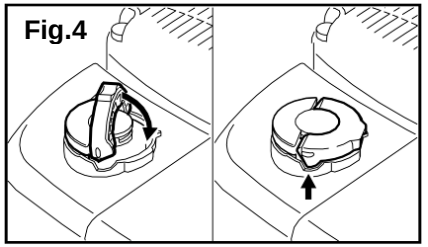
- Closing the plug:

❶ Place the tank plug with the pull-down clip vertical; the marks should line up. (Fig.3)

❷ Turn the plug clockwise (approx. ¼ turn) (Fig.4).

❸ Fold the pull-down clip down so it is flush with the surface of the plug.





If the pull-down clip is not perfectly flush with the surface of the plug and the clip lug does not fit in the recess (arrow) of the filling spout, the plug is not correctly fitted, and you must repeat the operation above.

3.3 Inspecting the machine

Prior to each use, in order to reveal any defects, a visual check must be carried out by a skilled and authorised person.
The inspection is mainly a visual and operational check.

The inspection phase ensures the different components are in good condition and have not been damaged during transport or storage.

- *Checking protective housings and mould assemblies* (this inspection takes place with the engine off)

  - Visually check that there are no external defects, deformations, superficial cracks, wear or marks of corrosion.

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- *Checking the fuel level* (this inspection takes place with the engine off)
  - Check the fuel level and if necessary top it up (⚠: refer to §1.3 "General safety instructions" / "Use and handling of fuel" and 3.2.2 "Filling with fuel").
- *Checking the operation* (these inspections take place with the engine off)
  - Check the throttle trigger, the throttle trigger lock and combined lever are working properly. These devices must move freely and never be modified.
  - Check that the socket turns freely with no load.
- *Checking the safety devices*
  - Make sure that the handles are clean and dry.
  - Turn the engine on (⚠: refer to §4.2 "Operating") and make sure that it stops when the combined lever is moved to position "**0**".
  - Make sure that the socket does not turn when the throttle trigger is at rest (refer to §5.1.4 "Carburettor" if adjustment is necessary).
- *Miscellaneous checks*
  - Check the absence of oil leaks, and that the all fixing bolts are tight.

STOP

IN THE EVENT AN ANOMALY SHOULD BE FOUND DURING THIS INSPECTION OR DURING USE, THE MACHINE MUST BE RESTORED TO FULL COMPLIANCE BY SKILLED PERSONNEL OR BY THE MANUFACTURER PRIOR TO RE-USE.

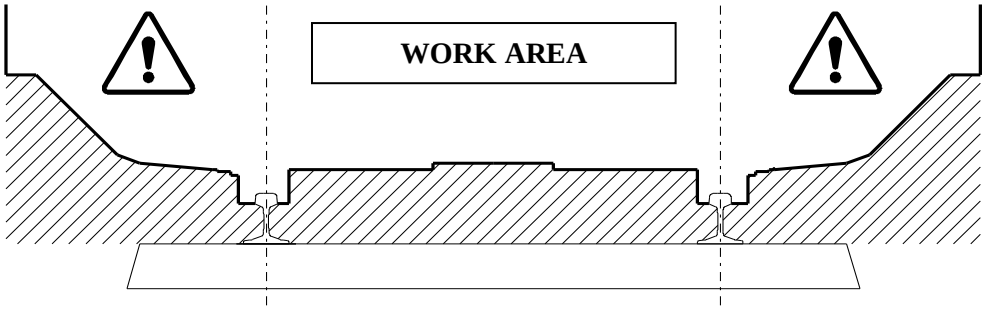
CHAPTER 4 – USE

4.1 Conditions of use

Work area and operator position

The operator's work area is between the two rails on a single string. The operator must be within this zone to carry out all bolting and sleeper screwing (inside and outside the rail).

⚠ If some work requires leaving this zone, make sure of the safety conditions, especially if the work takes place without halting the traffic on adjacent track.



4.2 Operating

Positions of the universal lever

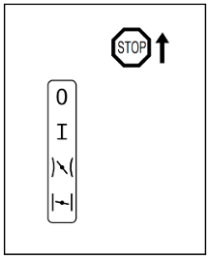
0 = **Engine stopped** – off.

I = **Normal operating position** – the engine turns or can start.

To move the universal lever from position **I** to ⟩⟨ or ⊢, simultaneously push in the throttle trigger lock and the throttle trigger.

⟩⟨ = **Hot start** – position for starting the hot engine – activating the throttle trigger, the universal lever moves to normal working position.

⊢ = **Cold start** – position for starting of the cold engine.

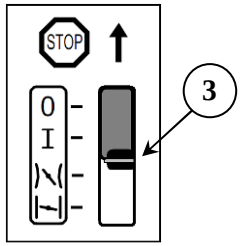


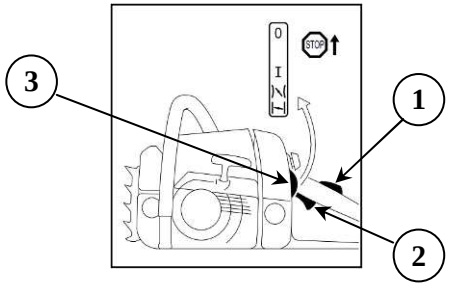
➔ Starting:

❶ Simultaneously push in the throttle trigger lock Ref.① and the throttle trigger Ref.②. While holding the two triggers in, push the universal lever Ref.③ to position ⊢. Then successively release the throttle trigger, the universal lever and the throttle trigger lock Ref.①.

❷ Set the universal lever Ref.③ to air temperature and engine temperature:

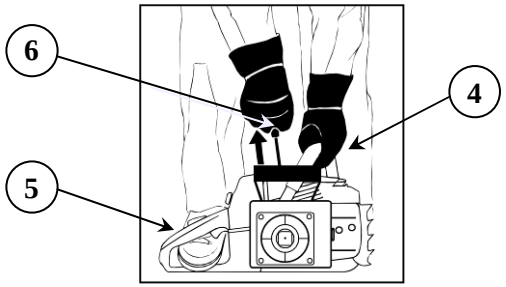
- if the engine is **cold**, set the universal lever to ⊢ (starting cold).
- if the engine is **hot** (also if the engine has already been running but is still cold or if the very hot engine was turned off for less than 5min), set the universal lever to ⊢ (starting hot).





❸ In order to make it easier to start the engine and to avoid risks of accident, the lower part of the power bolter should be on the ground.

Place your foot on the rear hand guard Ref.⑤. Grasp the front handle Ref.④ of the power bolter firmly with one hand. With the other hand, slowly pull the starting handle Ref.⑥ vertically upwards, until you feel compression, then pull it abruptly. Do not pull the cable fully out. Do not release the handle and let it return abruptly back, but guide it back with your hand in the opposite direction to the traction so that the cable winds back up properly. Never wind the starting cable around your hand.



❹ After the first ignition, set the universal lever Ref.③ to ⊢ and continue to start the engine. Once the engine is turning, push the throttle trigger Ref.② slightly so the universal lever Ref.③ moves automatically to normal operating position **I**, and the engine idles.

Slowly rev the engine to warm it up.

Let the engine run on idle for 30 seconds prior to use.

➔ Engine stopped:

➥ *If the engine doesn't start*:

➥ It may be that after the first starting kick, the starting lever Ref.③ did not return to position in time.

➥ The engine is therefore flooded.

❶ Place the starter damper lever in position = starting hot (even if the engine is cold).

❷ Pull the starting handle 10 to 20 times in order to ventilate the combustion chamber.

❸ Restart the engine.

➥ Make sure there is fuel in the tank.

Move the universal lever to the stop position **0**.

➥ *If the tank was filled after running empty*:

❶ Adjust the position of the starting lever Ref.④ depending on the air temperature and above all the engine temperature.

❷ Restart the engine.

Positions of the reversing lever:

Reversing lever to the right → Screwing

Reversing lever in the middle → Neutral.

Reversing lever to the left → Loosening

Never screw or unscrew while the engine is not hot.

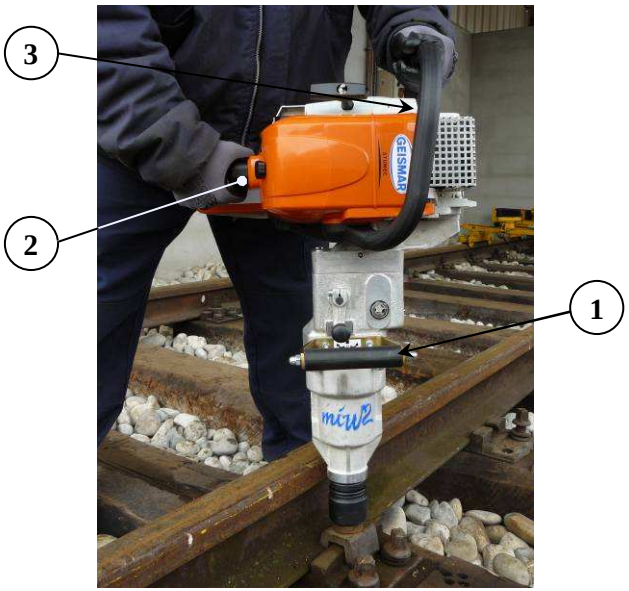
Screwing operation:

➥ Move the reversing lever Ref.① to the tightening position (to the right).

➥ Place the machine in position on the bolt or sleeper screw while holding it firmly with both hands: one hand holding the handle Ref.② with the throttle control handle and the other the front tube handle Ref.③ (use in vertical position).

➥ Rev the engine. The socket starts to move. Actual tightening power is only obtained after 3 seconds turning, starting from the moment when the blocking position is reached.

The portable impact wrench is not designed to screw at a precise torque. An excessive screwing may damage the coachscrew or the sleeper.



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Loosening operation:

➥ Move the reversing lever Ref.① to the loosening position (to the right).

➥ Place the machine in position on the bolt or sleeper screw in the same way as for tightening, but holding it firmly with one hand on the handle Ref.② with the throttle control and the other on the tubular handle Ref.③, or the front handle Ref.④ (use in horizontal position).

➥ Rev the engine. The socket starts the loosening movement after a few seconds.

⚠ **If the component does not unscrew, never continue for more than 10 seconds straight: reverse and try to "unstick" the bolt or sleeper screw by screwing it in for 3 seconds. Then start loosening it again and if after 10 seconds it still won't unscrew, try other means.**

NOTE: If the reversing lever does not move into position easily, lightly rev the engine in order to slowly rotate the reverser gears.

⚠ **Never reverse when the engine is revving**

➥ After each use, put the reversing lever to the neutral (centre), stop the engine by moving the universal lever to position **0**. Place the machine in a horizontal position.

4.3 Storage

4.3.1 General storage recommendations

During periods where the equipment is not in use, it is indispensible to store it properly in order to keep it in good working order. Poorly stored equipment may deteriorate when reused. Il is also important for the personnel responsible for storage operations to take great care during storage, and to carefully follow the recommendations.

⇨ Storage protection system

The choice of storage protection systems depends on 2 main factors:

- the length of time it will be stored
- the storage conditions: "unprotected" storage (exposure to bad weather) and "protected" storage (building, closed hangar, open hangar, canopy, etc.)

The equipment must only be stored after being run in. Measures must be taken to provide easy access around the equipment so maintenance operations can be carried out.

⇨ Storage premises

In general, premises for storing equipment should provide as good protection as possible against:

- dust, exhaust emissions, humidity
- direct sunlight
- rapid temperature changes

⇨ Storage procedures

The state of the equipment when recommissioned after storage depends on the way it was prepared and protected before storage:

- cleaning the equipment (when cleaning, protect the moving parts with grease).
- technical inspections to check for anomalies

4.3.2 Specific storage recommendations

If work should be halted for more than one week:

➨ Empty the fuel tank in a container in a well-ventilated area and clean it.

➨ Eliminate the fuel in compliance with the regulations governing the protection of the environment.

➨ Rev the engine until the carburettor is completely empty, otherwise the carburettor membranes may stick.

➨ Thoroughly clean the machine; especially the cylinder vanes and the air filter.

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CHAPTER 5 – SERVICING / MAINTENANCE

5.1 Servicing

This equipment may only be serviced and repaired by skilled personnel with a thorough knowledge in general mechanics.
Training and specific tooling are required for servicing and repairing this equipment correctly.

⚠ Before carrying out any servicing or repair operation, stop the engine (leave the control in the stop position) and wait for it to cool down. If the engine must operate (adjustment of the carburettor and check of the maximum light speed), make sure that the workspace is well ventilated.

⚠ Safety in use of this machine relies largely on correct servicing.

⚠ Waste resulting from servicing and maintenance operations (fluids, filters, used cloths, etc.) must be processed in accordance with applicable regulations governing environmental protection.

⚠ Any part that is worn, damaged or missing must be changed or repaired immediately, whenever there is a risk in terms of safety.

5.1.1 List of equipment and accessories required for servicing

The following tooling is required for carrying out all the servicing and maintenance operations correctly.

Work tooling (provided with the machine)	*Maintenance and servicing tooling (not provided with the machine)*
Flat-head screwdriver (Ref. 0000 890 2300) Screwdriver T27x120x70 (Ref.0812 370 1000) Spark plug spanner (Ref. 1129 890 3401) 13 x 23 open-ended spanner (Ref. GAW) 1 Ring (Ref. FPR) and 1 Pin (Ref. 56043) Pocket with tools (Ref. 0000 891 0801)	Multiple slip joint pliers Octagonal spanner 3, 4, 5 and 6 spanners Torx wrench 27

This list of tooling does not exclude the need for normal necessary equipment such as: cloths, brushes, grease, etc.

5.1.2 Cleaning

Make sure that the machine is kept as clean as possible. Care in cleaning the machine will lead to longer service life and improved performance.

Clean the machine carefully with a clean cloth or an airgun, taking special care to remove all dirt that has accumulated on it, especially close to any moving parts. As a precautionary measure, always wear gloves to avoid injury or burning of hands. Do not use fuel for cleaning operations. Only use non-inflammable, non-toxic products that are inoffensive for both the operator and the machine.

5.1.3 Tightening

After a running-in period of about 1 hour, check the position and tightness of all accessible nuts and screws (this does not apply to the carburettor adjustment screw).

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5.1.4 Carburettor

When shipped from the factory, the carburettor is delivered with the optimal adjustment corresponding to the pressure and climate conditions of the factory.

Apart from standard maintenance during use, it is recommended that you carry out repairs or adjustments to the carburettor using the agents of the GEISMAR / STIHL sales or breakdown repair network.

From time to time check the maximum rotation speed under load of the engine (9300 rpm). The carburettor must be inspected prior to commissioning: atmospheric conditions and altitude can significantly affect this adjustment.

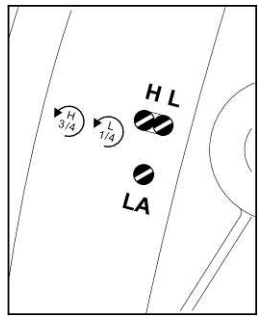
To inspect or adjust the carburettor, the machine must be on a blocked work position in order to measure the engine's speed under load. (Never rev the engine for more than 10 seconds. Wait 1 minute between 2 revs).

A rotation generation mechanism rotation speed that is too high may cause premature wearing of some components, and seriously affect the machine's performance.

For this inspection, use an electronic revolution counter (Ref. HLN). If the engine speed exceeds 9300 rpm under load, carry out another adjustment:

Turn the carburettor adjustment screws very slightly and carefully; the slightest rotation has a significant impact on the engine.

➡ ***Standard calibration***:



❶ Stop the engine.

❷ Check the air filter (replace it if necessary ➞ refer to §5.1.11).

❸ Check the muffler spark-arrester (clean it or replace it if necessary ➞ refer to §5.1.5).

❹ Acting precisely:

H ➞ Turning counter clockwise, screw the fast idle adjustment screw until it reaches the stop (maximum ¾ turn).

L ➞ Turn the rich idle adjustment screw clockwise until it reaches the stop then go back ¼ turn.

➡ ***Adjusting the idle***:

➥ *If the engine stalls on idle*:

LA ➞ Turn the idle adjustment stop screw clockwise, until the socket starts to grip then go back ¼ turn so the socket does not grip when the engine is on idle.

➥ *If the socket is gripping on idle*:

LA ➞ Turn the idle adjustment stop screw counter clockwise, until the socket stops, then ¼ turn in the same direction.

⚠ **If after this adjustment the socket does not stop on idle, have the portable power bolter repaired by a specialised dealer.**

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➥ *If the idle is not regular, if the engine does not turn over satisfactorily:*

The idle adjustment is too poor (in the case of lowered air temperature).

L ➙ Turn the rich adjustment screw counter clockwise, until the engine turns and revs at a maximum until it reaches the stop.

➥ *If it is not possible to increase the idle enough using the idle adjustment screw stop screw LA, if the engine stalls in the transition phase between partial and idle load:*

L ➙ Turn the rich idle adjustment screw approximately ¼ turn clockwise.

➥ ***Correcting the carburettor adjustment for use at high altitude:***

If the engine is not operating satisfactorily, a small correction of the adjustment may prove necessary.

❶ Check the standard adjustment.

❷ Warm up the engine.

❸ Adjust the idle correctly.

❹ Turn the fast idle adjustment screw **H** and the rich idle adjustment screw **L** clockwise (starving the mix).

⚠ A too poor adjustment risks causing engine trouble, after a lack of lubrication or overheating.

NB: all carburettor adjustments take place with the flathead screwdriver delivered with the machine service kit.

5.1.5 Muffler spark-arrester*

If the engine power decreases, check the muffler spark arrester.

⚠ Prior to this operation, wait for the engine to be completely cold.

❶ Loosen and unscrew the nuts Ref.①.

❷ Remove the cover Ref.②.

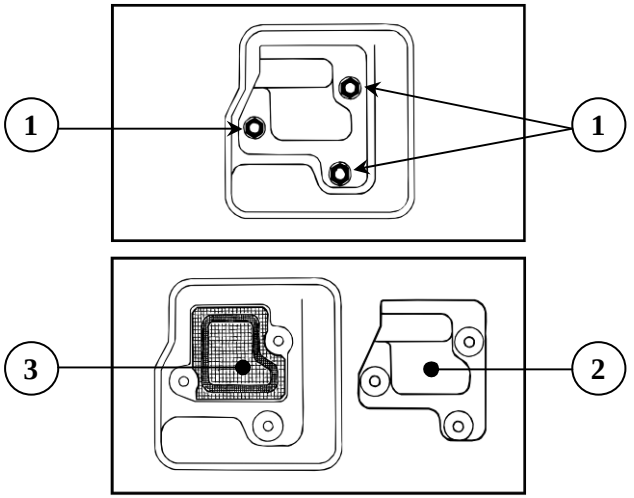
❸ Remove the spark-arrester Ref.③.

➥ Clean the spark arrester if it has become fouled.

➥ Replace the spark arrester if it is damaged or there are a lot of deposits.

➥ Fit the spark arrester and the cover.

*only for equipped impact wrench (USA, CANADA and AUSTRALIA)



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5.1.6 Spark plug

In the event of a lack of engine power, difficulty starting or if the idle is irregular, always first check the state of the spark plug.

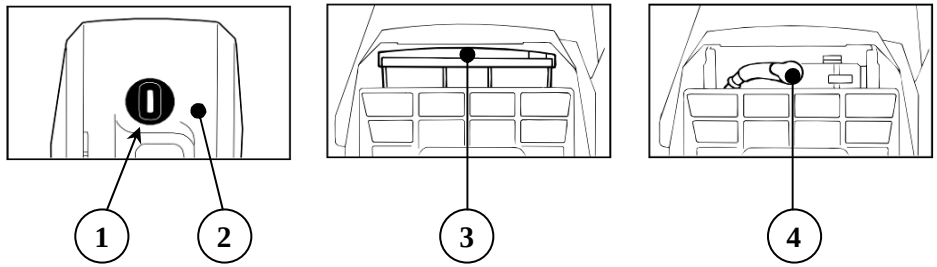
❶ Place the universal lever in position **0**.

❷ Turn button Ref.① above the rear handle to the left so that the slot is vertical.

❸ Move the carburettor housing cover Ref.② to the rear.

➥ Move the pre-filter Ref.③ upwards.

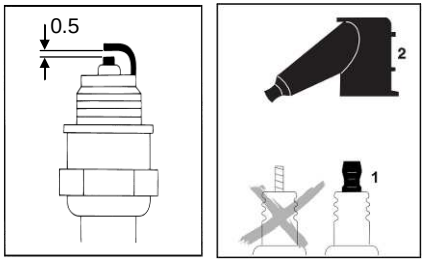
➥ Remove the starting cable switch Ref.④.



❹ Unscrew the spark plug using the socket provided, and dry it with a clean cloth.

❺ Check the state of the spark plug:

- If the spark plug has become fouled, *clean it* using a fine bristle metal brush. Then check that the electrodes are 0.5mm apart. Correct this if necessary.
- If the spark plug electrodes are well worn, *replace it*.



❻ Screw in the spark plug and make sure the starting cable switch is firmly in place, and replace the pieces you have previously removed.

⚠ **Always use only shielded spark plugs (Cf §2.4 "Technical characteristics"). Other spark plugs may damage the piston/cylinder.**

After cleaning the spark plug and prior to operating, remove the possible causes for the fouling of the spark plug:

- clogged air filter (Cf §5.1.11)
- poor adjustment of the carburettor (Cf §5.1.4)
- too much oil in the mix (Cf §3.2.1)

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5.1.7 Reducer and shock absorber

Lubrication:

➡ This is done by oil bath, which has several advantages:

- better lubrication compared to grease, which may spray onto active surfaces of the mechanism.
-good heat dissipation and dampening of the sound produced by the shock mechanism.

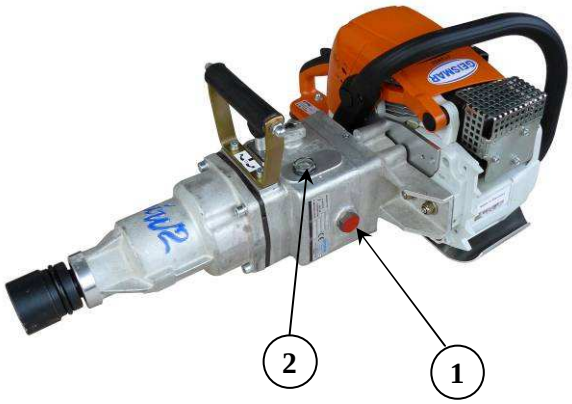
➡ Filling and draining via the plug Ref.①.

➡ Use only one Polyalkylene glycol-type synthetic oil for gears corresponding to the specification ISO: 6743/0 (1981) category C.

For example:

TOTAL:	CARTER SY 220
MOBIL:	GARGOYLE 22
SHELL:	TIVELLA WA
BP:	ENERGOL SGR-XP 150
ESSO:	COMPRESSOR OIL LG 50

CAUTION - These oils are non-miscible and incompatible with mineral oils and certain synthetic oils.



➡ Check the oil using indicator Ref.② each day. With the machine vertical, the oil rises to the middle of the indicator, (approx 0.7 litre volume).

➡ Change oil approx. every 40 operating hours. Change oil for new machine after 10 hours.

➡ When changing oil, clean the magnetic plug Ref.① that keeps out the metal particles in the oil. The presence of some particles is normal. On the other hand, if the plug is full of particles, we strongly recommend disassembly followed by a thorough examination of the mechanism.

⚠ **Clean the magnetic plug every week to remove the metal particles that accumulate during the operation of the machine.**

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5.1.8 Dismantling the shock mechanism

The shock absorber washer Ref.⑫ (Ref. 56141) is subject to strong mechanical actions and should therefore be replaced after a while. To do this the entire shock assembly must be disassembled.

Note: disassemble the machine in a clean area.

❶ Change oil

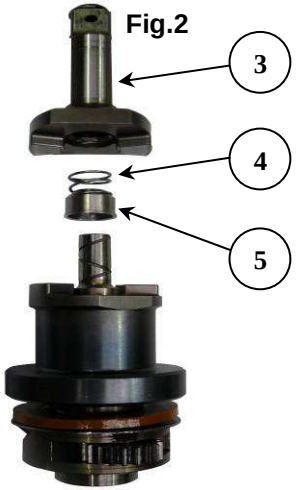
❷ Remove the 4 screws Ref.①.

❸ Remove the housing Ref.②.

❹ Remove the mechanism assembly by pulling upwards through the planet carrier (fig.1).

Fig.1

Fig.2



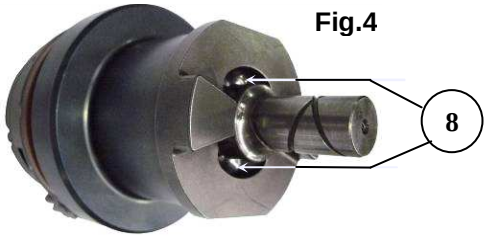
❺ Remove the drive tip Ref.③. and the spring Ref.④ and the bearing ring Ref.⑤ (fig.2).

❻ Place the mechanism in a vice equipped with padded jaws to avoid damaging the mechanism, then screw in the driving hammer Ref.⑥ and the planet carrier Ref.⑦ (fig.3) until the 2 balls Ref.⑧ can leave their slots (fig.4).

CAUTION - At this moment, nothing is holding the balls in place Ref.⑧.

Fig.3

Fig.4



❼ Loosen the vice; the driving hammer Ref.⑥ can be removed. Remove the drive spring Ref.⑨.

❽ Remove the spring cup Ref.⑩ (fig.5) being careful no to lose the balls Ref.⑪ (fig.6).

Fig.5

❾ Replace the shock absorber washer Ref.⑫ and the shock mechanism by reversing the disassembly procedure.

5.1.9 Replacing the starting cable

❶ Unscrew the screw Ref.① (fig.1).

➥ Unstick the fan housing Ref.② from the crankshaft housing Ref.③ and remove it from the side.

❷ Pull on the handle Ref.⑧ (Fig.3) and block the pulley by hand Ref.⑤. Completely unwind the cable from the pulley Ref.⑩ in order to slacken the spring (Fig.2). If the starting cable is broken, the spring will already be slack.

❸ Using an appropriate screwdriver or pliers, remove the spring staple Ref.④ (Fig.4).

❹ Carefully remove the pulley Ref.⑤ and the washer Ref.⑥.

❺ Remove the ratchet Ref.⑦.

❻ Using a screwdriver as a lever, remove the handle cap Ref.⑧.

➥ Remove the bit of the cable still in the pulley and the handle. Make sure the bush is not expelled from the handle.

➥ Make a simple knot at one end of the new starting cable then thread the cable, from top to bottom, through the handle Ref.⑧.

❼ Thread the starting cable from top to bottom, through the cable guiding bush Ref.⑨ (Fig.3).

➥ Fit the cap on the handle Ref.⑧.

➥ Pass the starting cable through the pulley Ref.⑤ and tie it off.

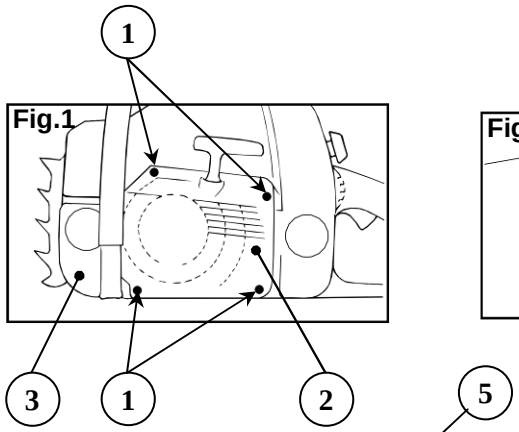
➥ Moisten the cable pulley bore with non-resin oil.

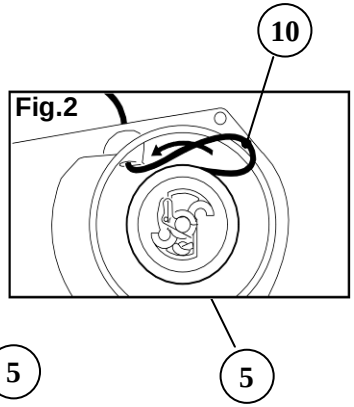
➥ Slide the pulley Ref.⑤ on the axis, and move it around a bit until the eyelet of the return spring clicks into place (Fig.5).

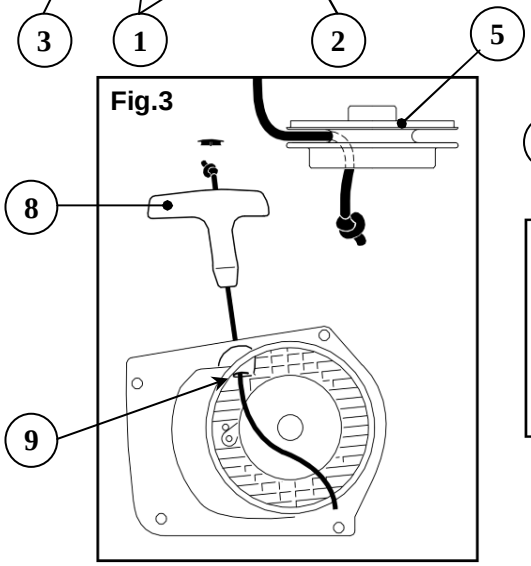
❽ Replace the ratchet Ref.⑦ in the pulley.

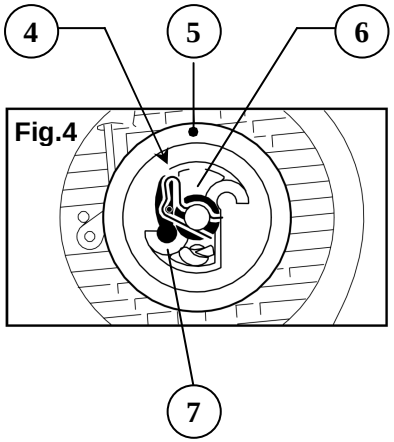
❾ Slide the washer Ref.⑥ on the axis.

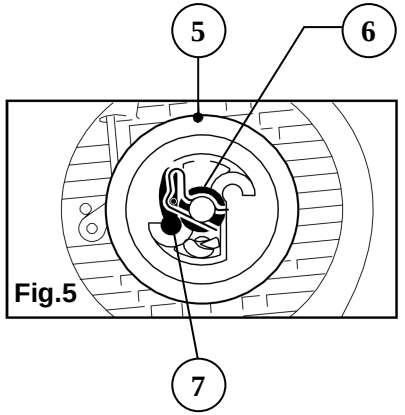
Push the spring staple Ref.④ in place on the axis and on the ratchet pilot point using a screwdriver or appropriate pliers. The staple must be oriented clockwise, as shown in the figure.











GEISMAR STUMEC

5.1.10 Return spring strain

❶ Make a loop with the unwound part of the starting cable and, with this loop, turn the pulley Ref.⑤ six rotations in the direction of the arrow.

❷ Keep hold of the pulley.

❸ Pull the twisted cable outwards and untwist it.

❹ Release the pulley.

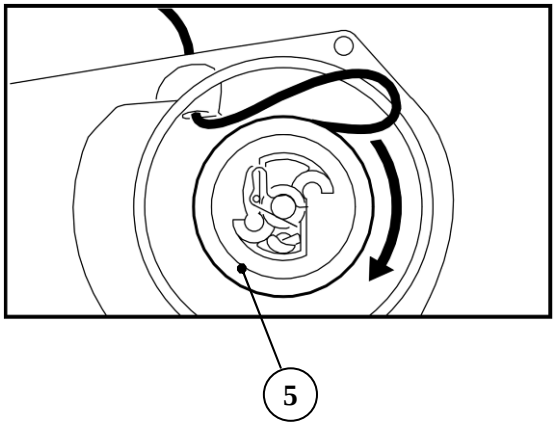
❺ Slowly release the starting cable, so it winds onto the pulley.

➥ The handle of the starting cable must be firmly drawn into the cable-guiding bush. If it is hanging on one side: retension the spring with an additional rotation.

➥ With the cable completely out, the pulley must still be able to complete a half rotation. If this is not possible, it means the spring is too tight – it may break.

❻ Remove one coil of the cable from the pulley.

❼ Replace the fan housing.



5.1.11 Replacing a return spring

❶ Dismantle the cable pulley by following operations n°1 to n°4 described in §5.1.8 "Replacing the starting cable".

❷ Remove the spring by carefully levering it out with a screwdriver.

❸ Moisten the replacement spring with a few drops of non-resin oil.

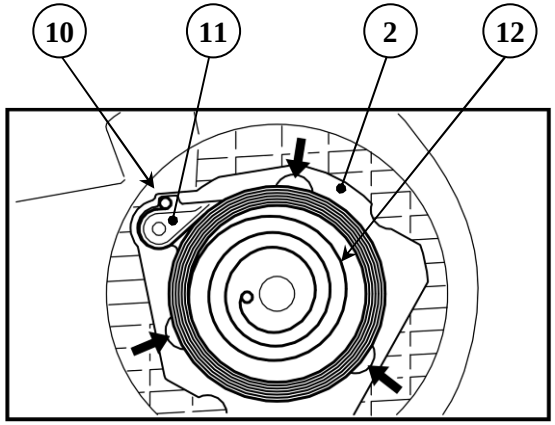
❹ Position the new spring with the mounting cable in the fan housing Ref.②. Pass the spring eyelet Ref.⑩ over the housing fin Ref.⑪.

❺ Use an appropriate tool (screwdriver, punch or such) on the stamps (arrows) and slide the spring Ref.⑫ into the housing slot. The spring is then freed from the assembly frame.

➥ If the spring comes free of the housing, fit it back into place by winding it counter clockwise, outside to inside.

❻ Refit the pulley to the cable, tauten the return spring, refit the fan housing and tighten the screws.

NB: if the spring comes free of the casing, refit it by winding it counter clockwise, outside to inside.



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5.1.12 Filter system

A clogged filtration system can cause the following problems:

- excessive fuel consumption
- problems starting the engine
- decreased engine power
- premature wear to the engine

➥ At the end of each work day (See Fig.1):

❷ Turn button Ref.① above the rear handle to the left so that the slot is vertical.

❷ Push the carburettor housing cover to the rear.

❸ Roughly clean the area around the filter.

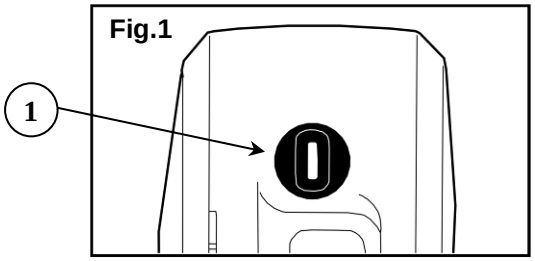
❹ Push the pre-filter Ref.② upwards (Fig.2).

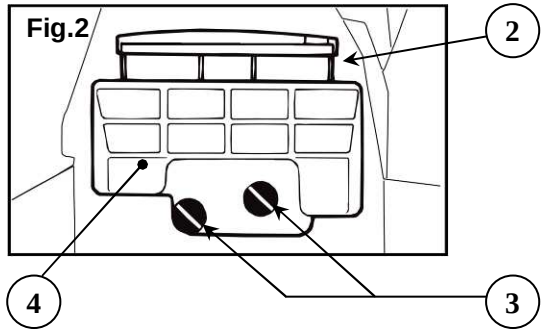
❺ Unscrew the split nuts Ref.③.

❻ Remove the main filter Ref.④.

➥ Separate the two filter parts.

➥ Knock the filter or clean it with compressed air by blowing from inside to outside, being careful to avoid damaging it.





If clogging continues:

➥ Wash the filter parts in universal STIHL cleaning product or a clean and non-flammable cleaning liquid (e.g. warm soapy water) then dry it.

⚠ **Do not brush the felt filter!**

➥ Replace the damaged filters.

➥ Fit the filter into place.

The filtering power and air permeability of all the components of the air filter of this power bolter are well-tuned.

For this reason, only use recommended air filters (referenced in § 5.2.2). The high quality of these parts and the recommended servicing and maintenance operations guaranty smooth operation and long durability of the engine.

IMPORTANT: If other brand filters are used, even if there dimensions seem appropriate, optimum protection of the engine block against impurities is not guaranteed. In the event of increased wear to engine block components or damage to the engine block resulting from the use of such filters, no warranty claim will be accepted.

5.1.13 Intake strainer

The intake strainer is on the inside of the fuel tank and must be replaced in the event of clogging or at least once per year.

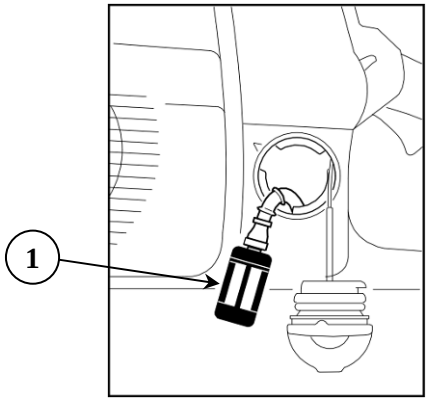
❶ Drain the fuel tank.

❷ Remove the intake strainer Ref.① from the tank with a hook and pull it from the flexible hose.

❸ Place the new intake strainer in the flexible hose.

❹ Place the intake strainer in the fuel tank.

To avoid clogging on the intake strainer, protect the fuel tank from impurities while filling.



5.1.14 Cooling system

There is a cooling system to maintain the operating temperature of the portable power bolter as low as possible therefore avoiding damage to the cylinder and piston.

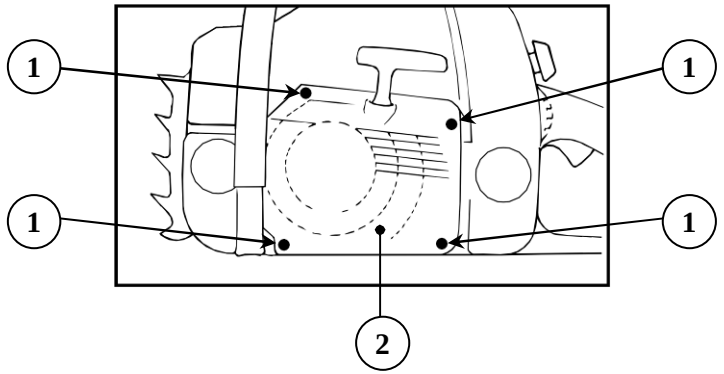
To preserve its efficiency, this system must be cleaned once per week with compressed air.

❶ Unscrew the four screws Ref.① (multiple spanner).

❷ Remove the fan cover Ref.②.

❸ Clean the fins and the inside of the fan cover, the fins on the rotor fan, the half-housing, the inside of the air inlet cap and the cooling vanes on the cylinder.

❹ Tighten the four screws again Ref.①.



GEISMAR STUMEC

5.2 Maintenance

5.2.1 Preventive maintenance schedule

COMPONENTS	TYPE OF OPERATION	FREQUENCY								Reference
		Prior to each use	After each use	Once per week	Once per month	Once per year	In event of breakdown	In event of damage	If needed	
Entire machine	Inspecting the machine	X								Chap.3 - § 3
	Perform general cleaning with a clean cloth or blow nozzle to remove dirt from the machine		X							Chap.5 - § 1.2
Control components	Check the operation	X								Chap.3 - § 3
Accessible nuts and bolts (except for adjustment screws)	Retighten								X	Chap.5 - § 1.3
Carburettor	Check that the drive chuck does not turn on idle	X								Chap.5 - § 1.4
	Adjust the settings								X	
Muffler spark-arrester (if equipped)	Clean			X						Chap.5 - § 1.5
	Replace								X	
Spark plug	Rectifying electrodes spacing						X			Chap.5 - § 1.6
	Replace							X	X	
Magnetic plug	Clean			X						Chap.5 - § 1.7
Drawn cup needle bearing (Engine / Clutch)	Greasing					X	X			Chap. 5- § 1.8

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COMPONENTS	TYPE OF OPERATION	FREQUENCY								Reference
		Prior to each use	After each use	Once per week	Once per month	Once per year	In event of breakdown	In event of damage	If needed	
Shock device	Check the oil level	X								Chap.5 - § 1.7
	Oil change				X					
Starting cable	Replace							X		Chap.5 - § 1.9
Return spring	Replace							X		Chap.5 § 1.11
Shock absorber washer	Replace						X	X	X	Chap.5 §1.8
Filter system	Clean the filter casing and area around it		X							Chap.5 § 1.12
	Replace							X	X	
Intake strainer	Clean						X			Chap.5 § 1.13
	Replace					X		X	X	
Cooling system	Clean			X						Chap.5 § 1.14
Fuel tank	Check sealing	X								Chap.1 § 4.3
	Clean				X					
Maximum speed IN LOAD of drive chuck	Check			X						Chap.1 § 4.5

NOTE: These recommendations are not limitative. Permanent checks on the machine and well-organised preventive maintenance will always extend the machine's service life.

Indications given on the preventive maintenance schedule are given for machines used under normal conditions. In more difficult working conditions and longer working days the frequency of maintenance operations must be shortened accordingly.

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5.2.2 List of normal wear parts (this list does not include engine parts)

This is a list of normal wear parts on the machine together with the conditions under which they should be replaced.
Nevertheless, any part that is worn, damaged or missing must be changed or repaired immediately, whenever there is a risk in terms of safety.

Description	Let.	No.	Replacement conditions
Drive tip	56036 B	1	Wear or breakage
Cam hammer	56046 A	1	
G 10 x 17 x 3 sealing joint	FPE	1	Oil leak or poor operation
BA 34 x 46 x 8 sealing joint	FPF	1	
Friction washer	56028	1	
Ø 17 x 28 x 7 sealing joint	FBE	1	
Spark-arrester *	56151	1	Clogging
Intake strainer	0000 350 3500	1	
Air filter	1127 120 1620	1	
Air filter	1127 120 1621	1	
Bosch WSR 6 F spark plug	1110 400 7005	1	Well-worn spark plug electrodes
NGK BPMR7A spark plug	0000 400 7000	1	
Lower protector	56148	1	Deterioration
Pre-filter	1127 124 1501	1	
Ø 3.5 x 960 mm starting cable	1113 195 8200	1	Breakage
Return spring	1129 190 0601	1	
Starting handle	1121 195 3400	1	
Spring ring	56042	1	

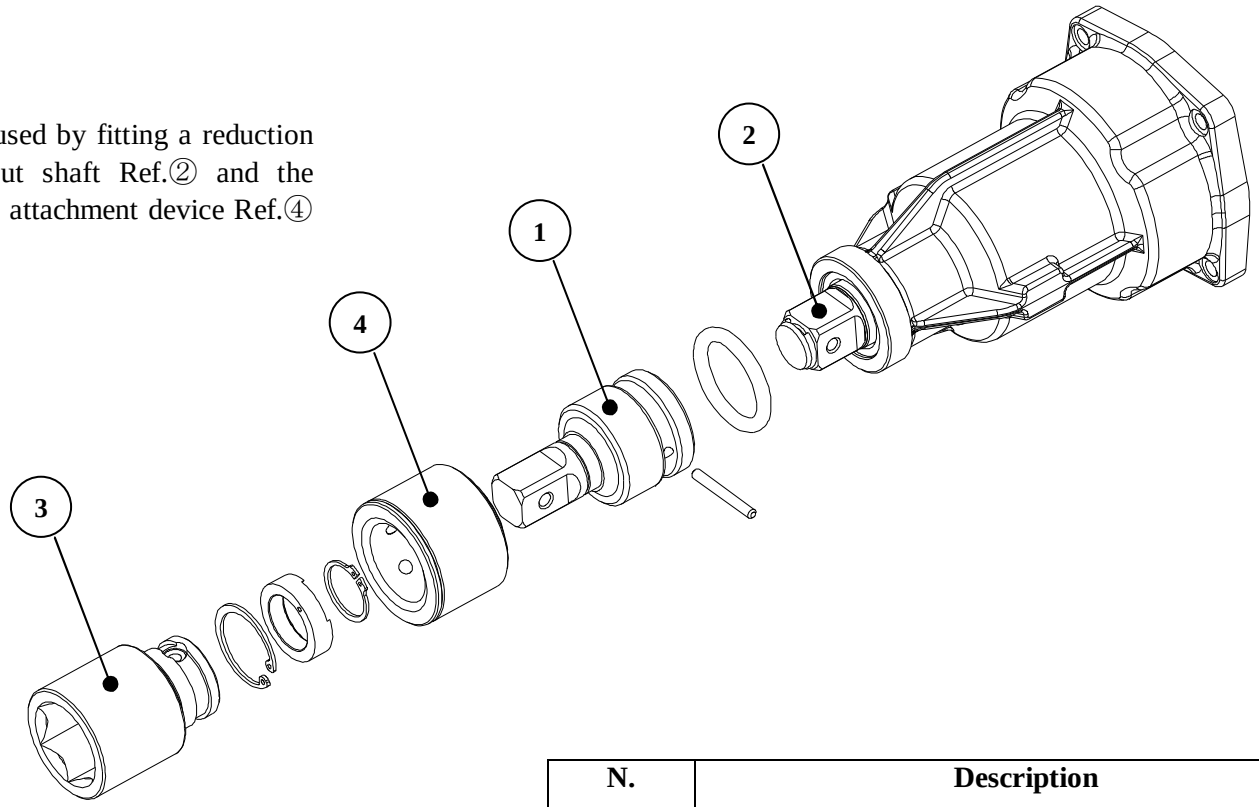
*only for equipped impact wrench (USA, CANADA and AUSTRALIA)

CHAPTER 6 – ACCESSORIES AND OPTIONS

6.1 Optional equipment

6.1.1 Adaptable accessories

Bushes with a different square coupler can be used by fitting a reduction bush Ref.① (Ref. 56076) between the output shaft Ref.② and the tightening bush Ref.③. Then use a ball spanner attachment device Ref.④ (Ref. 880E).



N.	Description
56000 D	25.4 – 23mm reduction bush assembly
56000 J	25.4 – 23mm reduction bush assembly for use with ball attachment
56000AE	Extended bolter assembly adaptable to MIW2

CHAPTER 7 – SPARE PARTS CATALOG

7.1 Drawings and parts lists

IMPORTANT

Afin que votre commande de pièces de rechange soit suivie d'une livraison prompte et correcte, bien indiquer :

- Le rep., le nombre et la désignation des pièces de rechange
- Le type et le n° de série de la machine (plaque sur le châssis)

****

IMPORTANT

To ensure that you are delivered promptly and correctly after placing an order for spare parts please state:

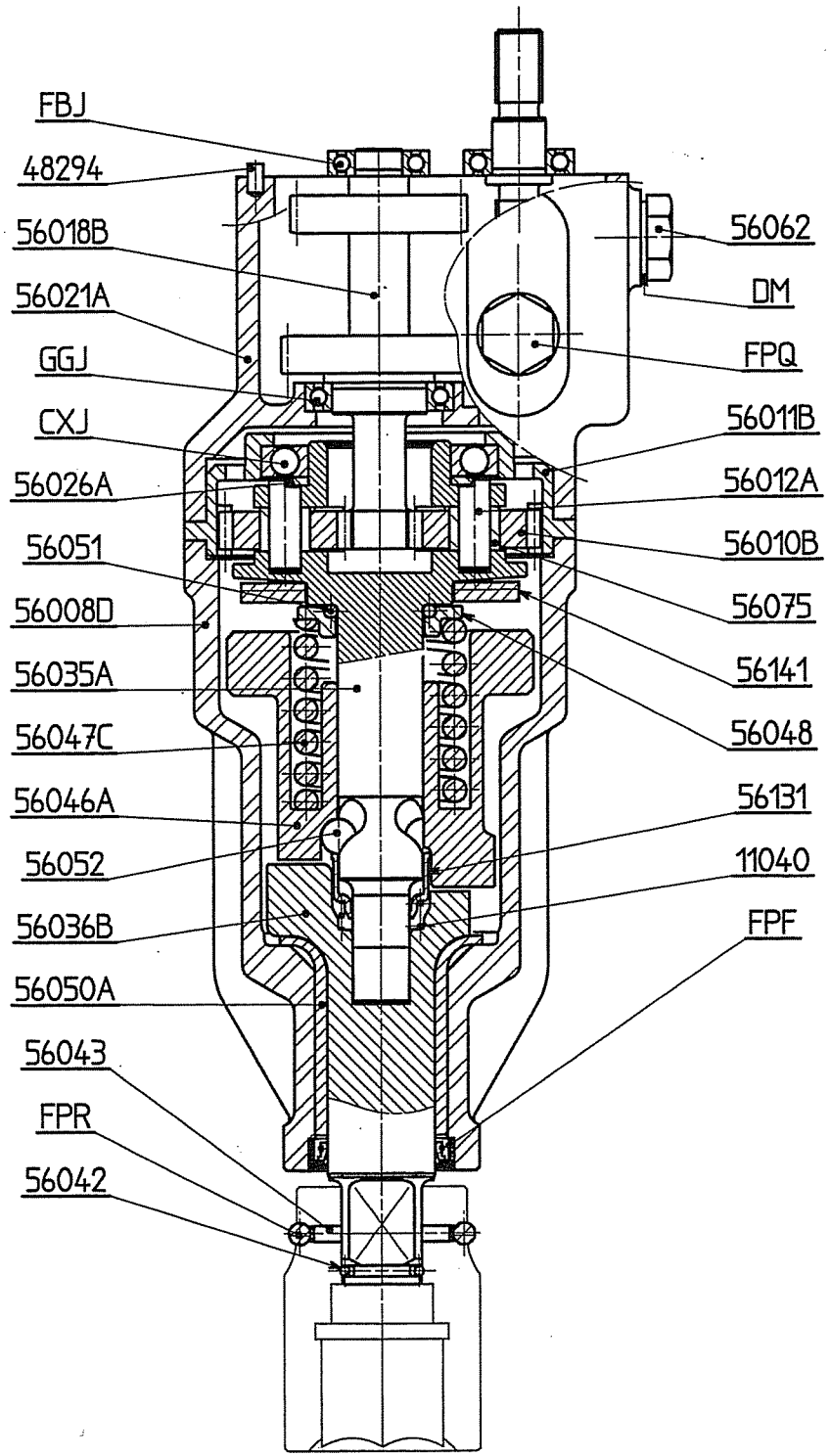
- the Reference, number and description of the spare parts
- the type and serial number of the machine (to locate this number, look at the plate on the chassis)

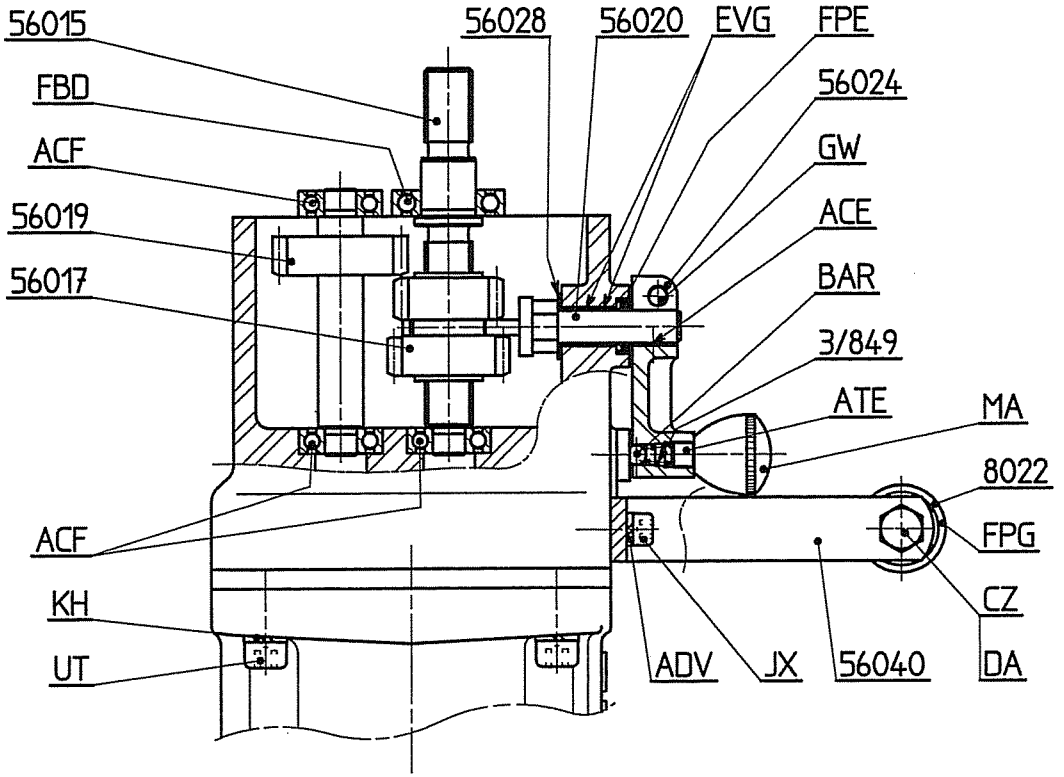
****

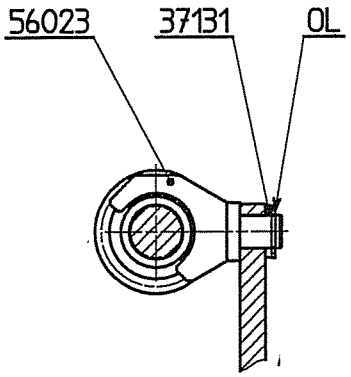
WICHTIG

Um uns eine schnelle und fehlerlose Erledigung lhres Ersatzteil-Auftrages zu erlauben, bitten wir Sie um folgende Angaben :

- Seriennummer und Baujahr der maschine
- Benennung und Bestellnummer der Ersatzeile



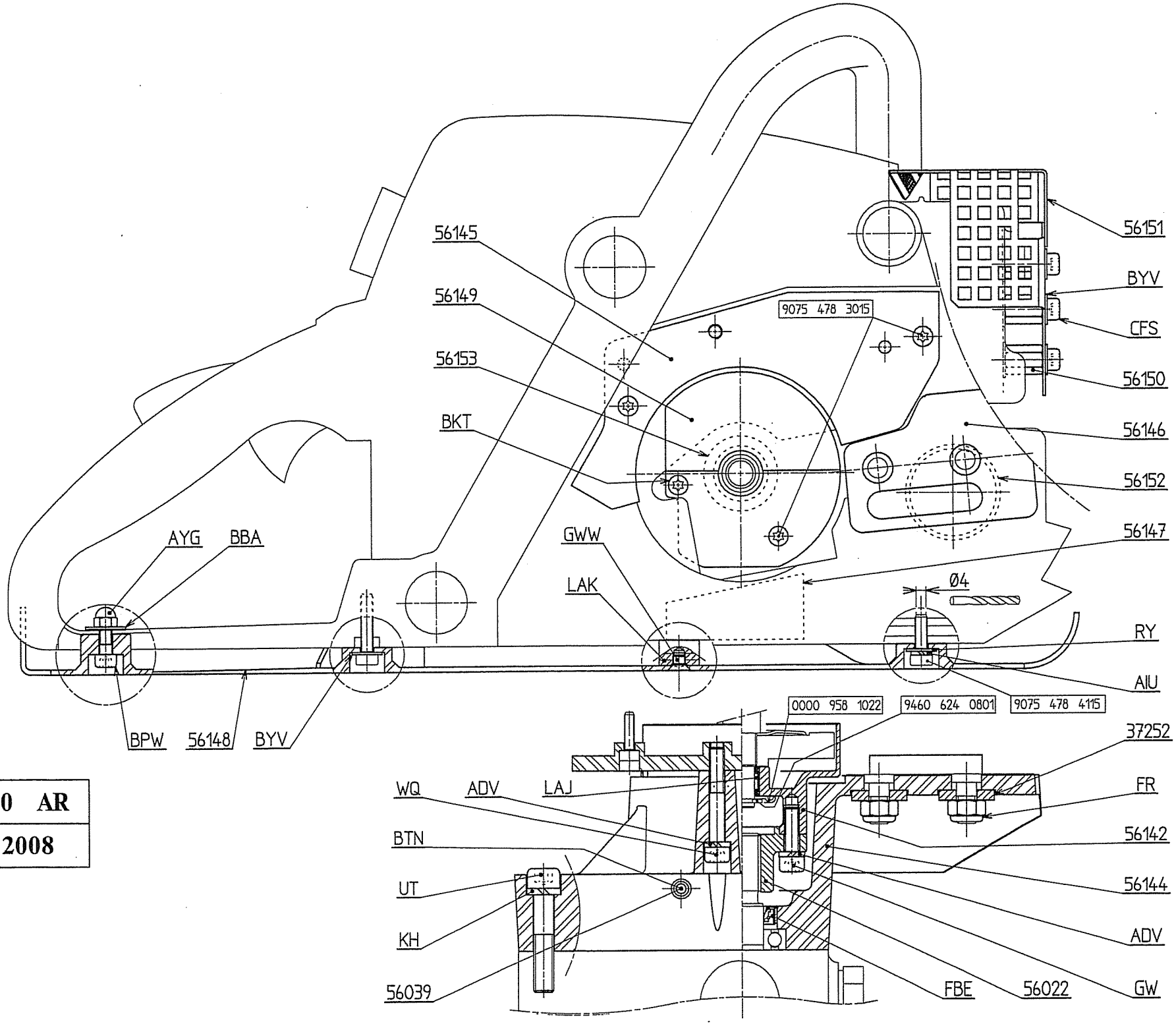




56000 AQ
10-2008

Ref.	Qty	Description
3/849	1	Spring
8 022	1	Handle
11 040	1	Spring
37 131	1	Washer Ø 10 x 18 x 2
48 294	2	Centering pivot Ø 5 x 12
56 008 D	1	Body
56 010 B	2	Planet wheel
56 011 B	1	Fixed crown-wheel
56 012 A	2	Planet wheel axle
56 015	1	Sliding gear wheel shaft
56 017	1	Sliding gear wheel
56 018 B	1	Reversing gear wheel
56 019	1	Intermediate gear wheel
56 020	1	Reversing lever
56 021 A	1	Reversing gear box
56 023	1	Fork
56 024	1	Reversing gear control handle
56 026 A	1	Spacer
56 028	1	Wear washer
56 035 A	1	Reducer shaft
56 036 B	1	Driving nose
56 040	1	Handle
56 042	1	Spring ring
56 043	1	Pin Ø 5 x 45
56 046 A	1	Cam hammer
56 047 C	1	Impact spring
56 048	1	Spring cup
56 050 A	1	Bearing bush
56 051	24	Cup ball
56 052	2	Raising ball
56 062	1	Magnetic plug
56 075	2	Planet wheel ring
56 131	1	Ring
56 141	1	Washer

Ref.	Qty	Description
CZ	1	Threaded rod Ø 8 x 145
DA	2	Cap nut H 8
DM	1	Metalloplastic washer Ø 17
GW	1	Screw Chc 6 x 20
JX	2	Screw Chc 6 x 16
KH	4	Washer W 8
MA	1	Bakelite knob Ø 25
OL	1	Securing ring 10 e
UT	4	Screw Chc 8 x 40
ACE	1	Disc key 3 x 3,7
ACF	3	Bearing n° 6000
ADV	2	Washer W 6
ATE	1	Stud M 8 x 22
BAR	1	Steel ball Ø 6
CXJ	1	Bearing n° 16009
EVG	2	Ring PAP 1008 P 10
FBD	1	Bearing n° 16003
FBJ	1	Bearing n° 16002
FPE	1	Tightness joint G 10 x 17 x 3
FPF	1	Tightness joint BA 34 x 46 x 8
FPG	1	Handle sheath L = 120
FPQ	1	Oil level indicator 34-03515
FPR	1	Spring ring Ø 45 x 7
GGJ	1	Bearing n° 61906

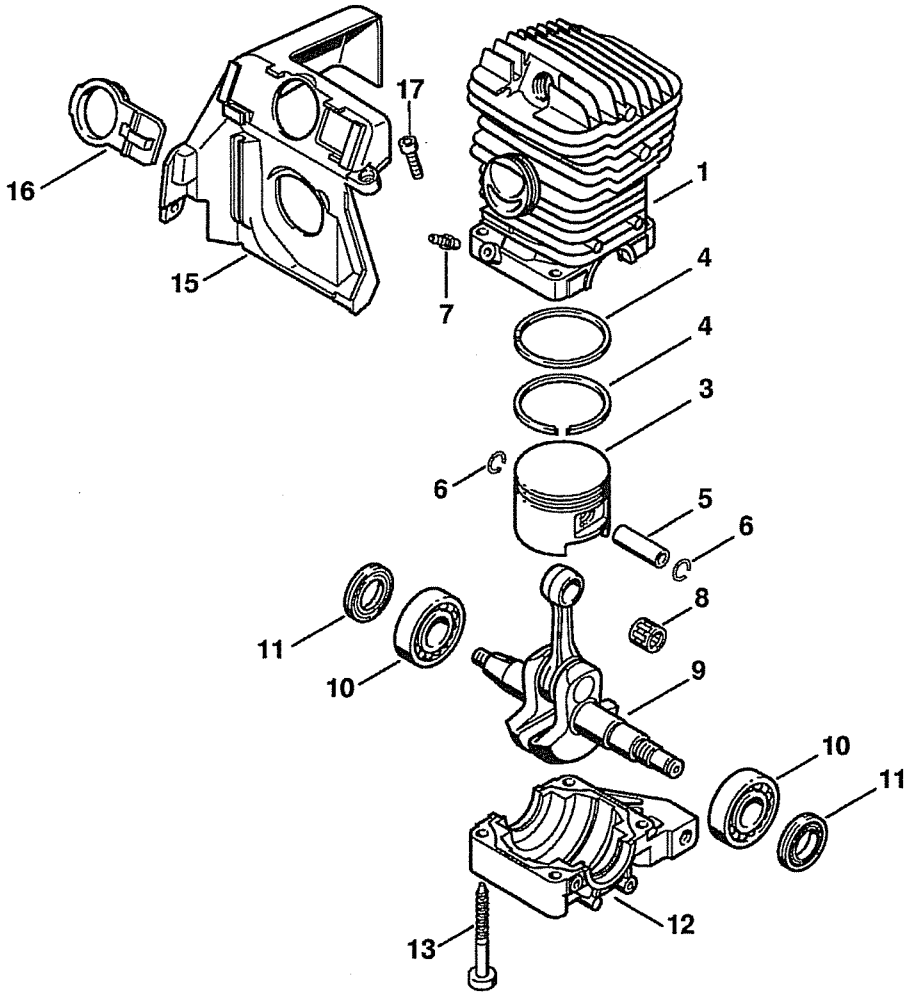


56000 AR
10-2008

Ref.	Qty	Description
37 252	2	Washer Ø 8,2 x 22 x 4
56 022	1	Coupling sleeve
56 039	2	Felt seal
56 142	1	Clutch bell
56 144	1	Engine support
56 145	1	Engine adaptator
56 146	1	Intermediate plate
56 147	1	Elastic stop
56 148	1	Engine guard
56 149	1	Deflector
56 150	3	Nut
56 151	1	Guard
56 152	1	Plug
56 153	1	Washer

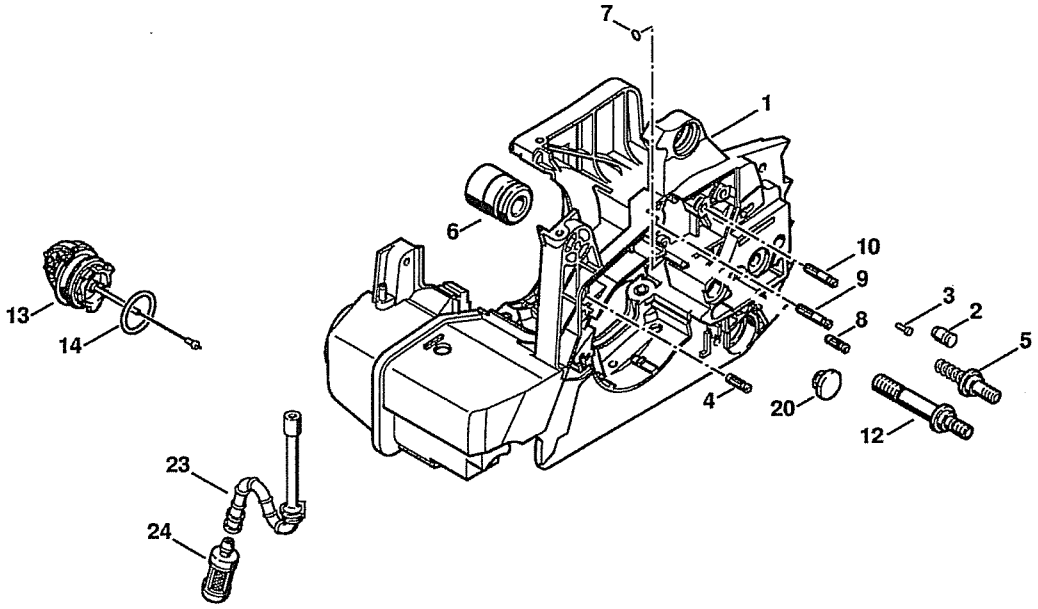
Ref.	Qty	Description
FR	2	Stop nut H 8
GW	4	Screw Chc 6 x 20
KH	4	Washer W 8
RY	2	Washer M 5
UT	4	Screw Chc 8 x 40
WQ	1	Screw Chc 6 x 40
ADV	5	Washer W 6
AIU	2	Washer W 5
AYG	1	Cap nut H 5
BBA	1	Washer L 5
BKT	2	Washer W4
BPW	1	Screw Chc 5 x 16
BTN	1	Inside spring ring 7015-8
BYV	5	Washer JZC 5
CFS	3	Screw Chc 5 x 8
FBE	1	Tightness joint Ø 17 x 28 x 7
GWW	2	Screw Fhc 5 x 6
LAJ	1	Needle bush HK 10 10
LAK	2	Elastic stop Ø 16 x 10 – M 5 x 5

A	03 /09
MIW 2	



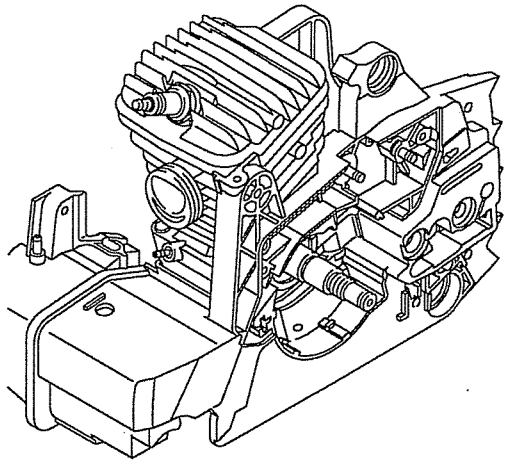
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
1	1127 020 1217	1	Ø 46 □ 3→7, 13
3	1127 030 2003	1	Ø 46 □ 4→6
4	1118 034 3001	2	Ø 46 x 1,5
5	1110 034 1500	1	10 x 6 x 32
6	9463 650 1000	2	Ø 10
7	0000 988 5211	1	
8	9512 003 2340	1	Ø 10 x 14 x 13
9	1127 030 0402	1	
10	9503 003 0440	2	6 203
11	9639 010 1743	2	Ø 17 x 30 x 4,4
12	1127 021 2500	1	
13	9075 478 4735	4	IS – D6 x 52
15	1127 084 0900	1	
16	1127 084 4100	1	
17	9075 478 3015	2	IS – D4 x 15

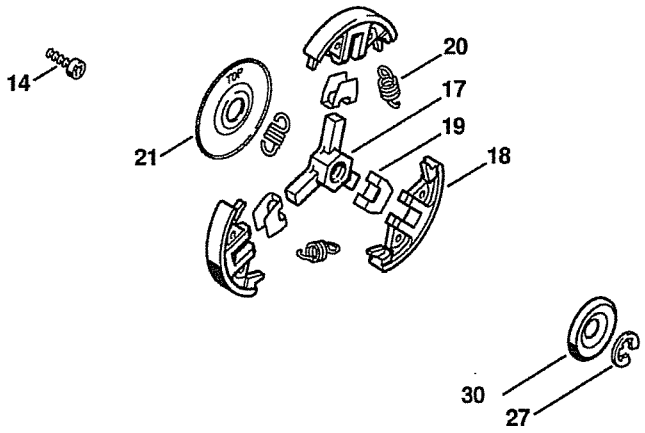
D	03 /09
MIW 2	



Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
1	11 27 020 3003	1	□ 2→10, 13
2	1128 640 9100	1	
3	0000 974 1200	1	Ø 2,6 x 8
4	1120 162 5200	1	
5	1127 664 2400	1	
6	1127 790 9900	1	
7	9645 945 7444	1	Ø 4 x 1,5
8	1121 162 5200	1	
9	1123 162 5205	1	
10	1123 162 5200	1	
12	1127 664 2405	1	
13	0000 350 0525	1	□ 14
14	9645 948 7734	1	Ø 25 x 3,5
20	1123 791 7300	1	
23	1127 358 7702	1	
24	0000 350 3500	1	

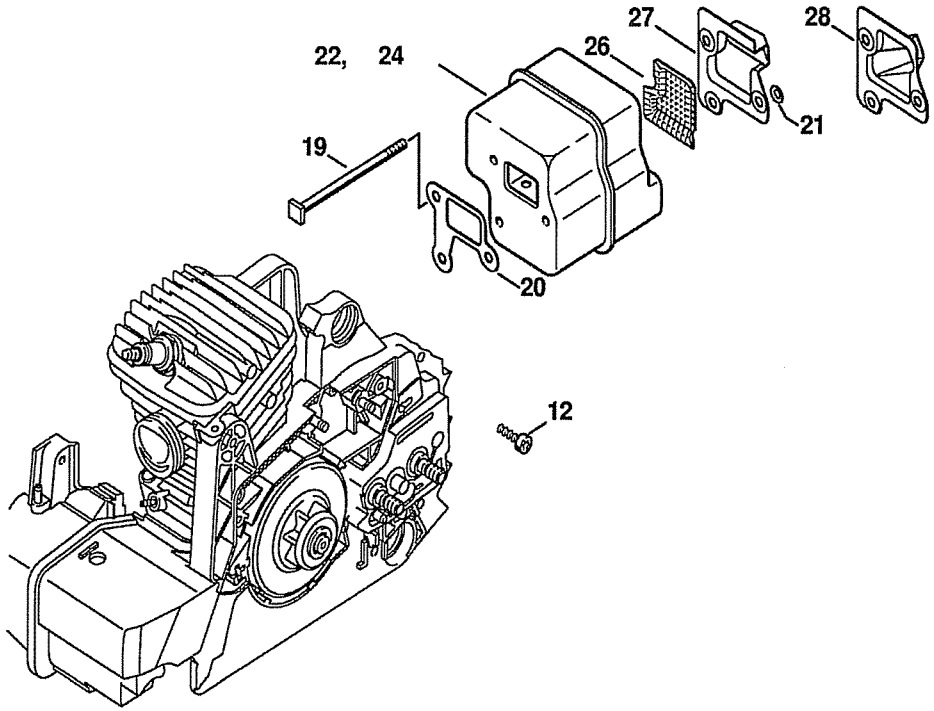
E	03 /09
MIW 2	





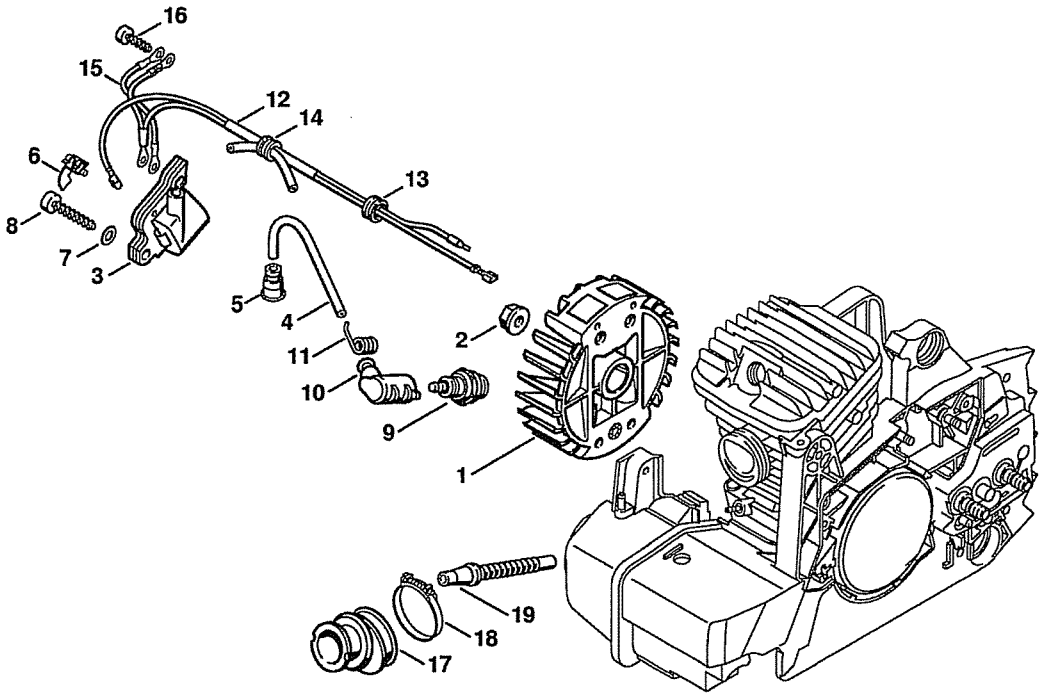
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
14	9075 478 3015	2	IS – D4 x 15
	1127 160 2051	1	□ 17→21
17	1127 162 3200	1	
18	1125 162 0802	3	
19	1127 162 3000	3	
20	0000 997 0909	3	
21	1127 162 1000	1	
27	9460 624 0801	1	Ø 8 x 1,3
30	0000 958 1022	1	Ø 27

F	03 /09
MIW 2	



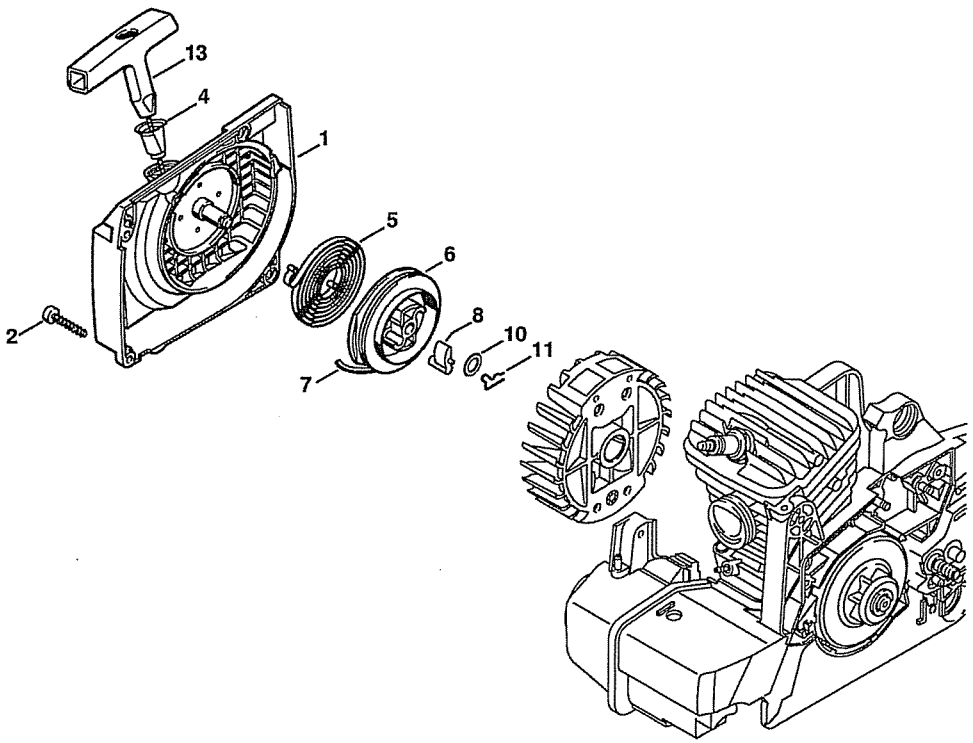
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
12	9075 478 3015	2	IS D4 x 15
19	1127 148 1200	3	
20	1127 149 0650	1	□ 21
21	9331 630 0120	3	Ø 5
22	1127 140 0601	1	□ 28
24	1127 140 0607	1	USA, CDN, AUS, NZ □ 26, 27
26	1127 141 9000	1	USA, CDN, AUS, NZ
27	1127 145 1606	1	USA, CDN, AUS, NZ
28	1127 145 1601	1	

G	03 /09
MIW 2	



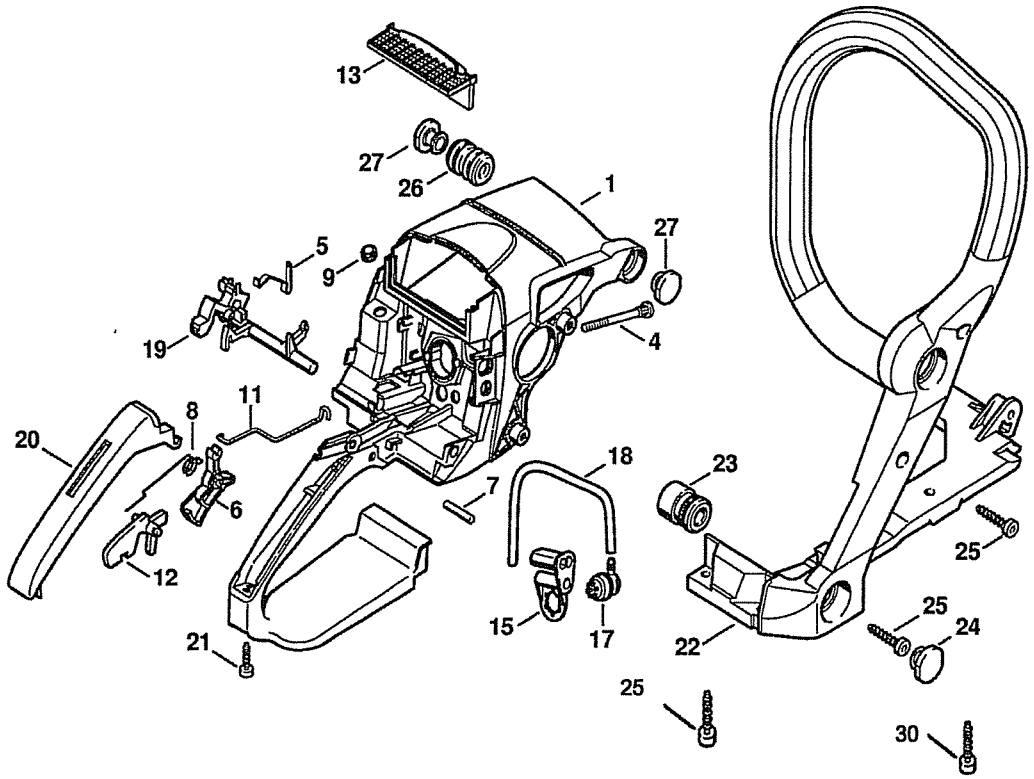
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
1	1127 400 1200	1	
2	0000 955 0802	1	M 8 x 1
3	0000 400 1300	1	□ 4→6
4	0000 405 0600	1	1000 mm
5	0000 989 1010	1	
6	0000 448 1250	1	
7	9291 021 0120	1	Ø 5,3
8	9075 478 4155	2	IS – D5 x 24
9	1110 400 7005	1	Bosch WSR 6F
9	0000 400 7000	1	NGK BPMR 7A
10	1128 405 1000	1	
11	0000 998 0604	1	
12	1127 440 3001	1	□ 13
13	0000 989 0814	1	
14	1125 084 8900	1	
15	1123 440 2200	1	
16	9075 478 3015	1	IS D4 x 15
17	1127 141 2200	1	
18	9771 021 2620	1	Ø 36 x 5
19	1127 141 8600	1	

H	03 /09
MIW 2	



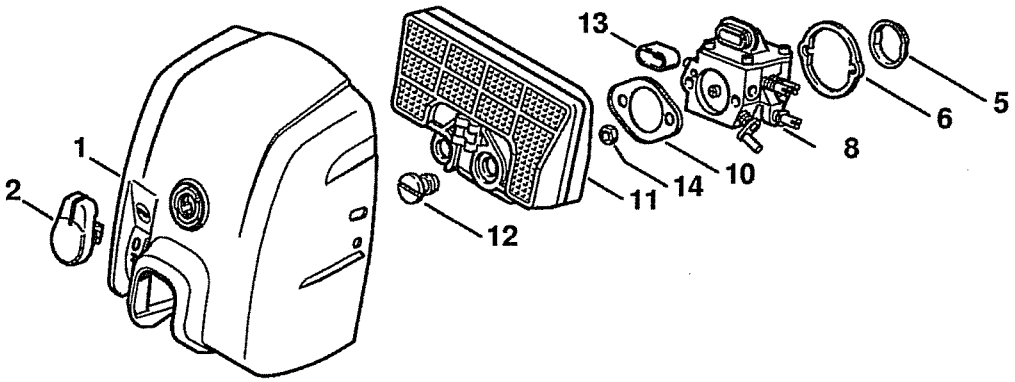
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
	1127 080 2103	1	☐ 1,4 → 8,10,11,13
1	1127 080 1802	1	☐ 4
2	9075 478 4155	4	IS – D5 x 24
4	1110 084 9102	1	
5	1129 190 0601	1	
6	1128 195 0400	1	
7	1113 195 8200	1	Ø 3,5 x 960 mm
8	1125 195 7200	1	
10	0000 958 0923	1	
11	1118 195 3500	1	
13	1121 195 3400	1	

J	03 /09
MIW 2	



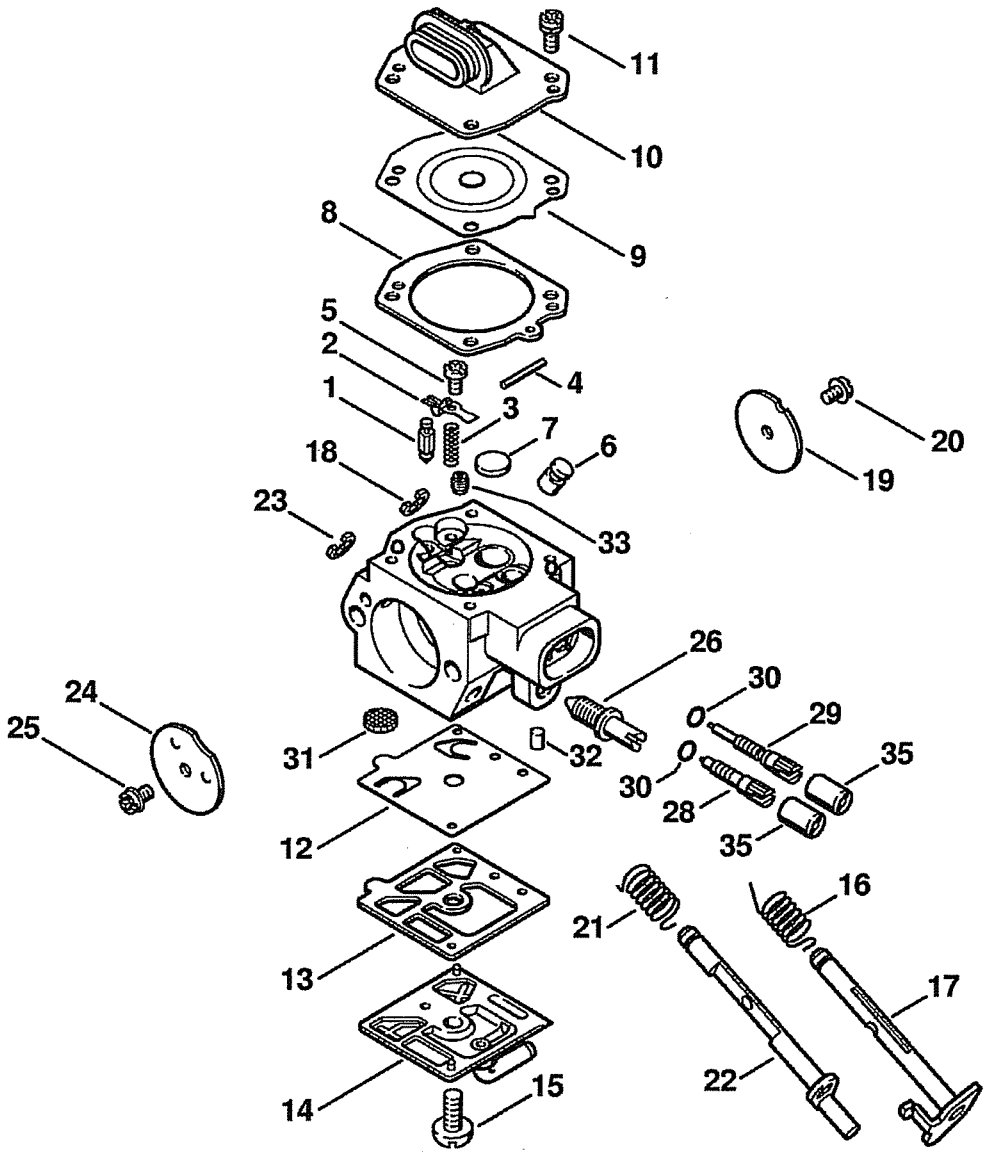
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
1	1127 790 1002	1	□ 4 → 9
4	1122 122 6602	2	
5	1127 442 1600	1	
6	1128 182 1005	1	
7	9371 470 2640	1	Ø 5 x 24
8	1117 182 4500	1	
9	0000 989 0815	1	
11	1127 182 1500	1	
12	1117 182 0805	1	
13	1127 124 1501	1	
15	1127 123 7503	1	
17	0000 350 5802	1	
18	1127 358 7600	1	
19	1127 182 0900	1	
20	1123 791 0600	1	
21	9075 478 3015	1	IS – D 4 x 15
22	1127 790 1700	1	□ 23
23	1123 790 9900	2	
24	1123 791 7300	2	
25	9075 478 4155	7	IS – D5 x 24
26	1123 791 2805	1	
27	1123 791 7310	2	
30	9075 478 4115	2	IS – D5 x 16

K	03 /09
MIW 2	



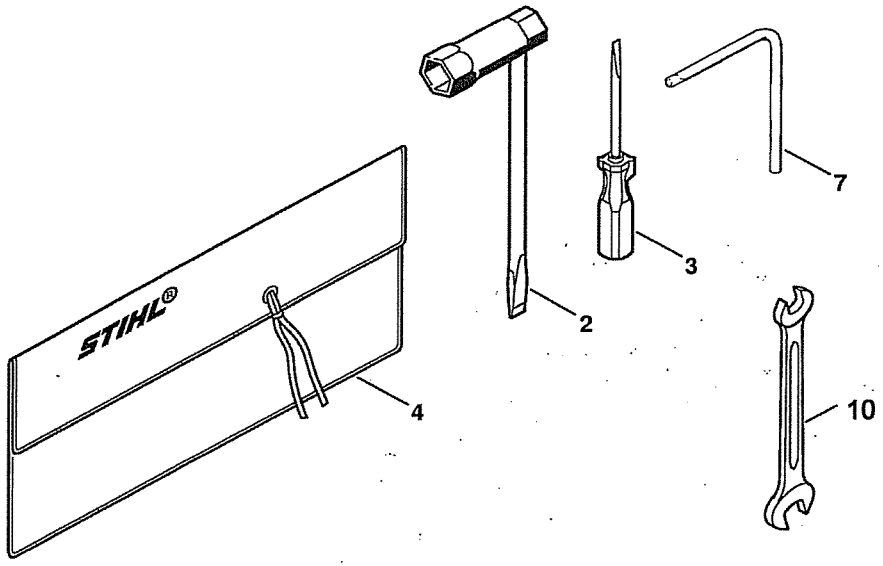
Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
1	1127 140 1903	1	☐ 2
2	1123 141 2301	1	
5	1117 141 1800	1	
6	1128 121 8600	1	
8	1127 120 0604	1	HD – 18 C
10	1127 121 7000	1	
11	1127 120 1620	1	☐ 12
11	1127 120 1621	1	☐ 12 - USA,CDN,AUS,NZ
12	1124 141 8300	2	
13	1124 121 9100	1	
14	9210 260 0700	2	M 5

M	03 /09
MIW 2	



Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
	1127 120 0604	1	HD18C - ☐ 1→33, 35
1	4116 121 5100	1	
2	4116 121 5000	1	
3	4116 122 3002	1	
4	1113 121 9200	1	
5	1114 122 7400	1	
6	1128 121 5403	1	
7	4117 122 9402	1	
8	1128 129 0906	1	
9	4116 121 4700	1	
10	1128 121 0801	1	
11	1121 122 7101	4	
12	4116 121 4800	1	
13	4116 129 0902	1	
14	1127 121 0800	1	
15	1114 122 7100	1	
16	1127 122 3200	1	
17	1127 120 7100	1	
18	1117 122 9000	1	
19	1127 121 3301	1	
20	1115 122 7400	1	
21	1127 122 3205	1	
22	1127 120 7200	1	
23	1123 122 9000	1	
24	1122 121 2900	1	
25	1110 122 7400	1	
26	1127 122 6200	1	
28	1128 122 6703	1	"H" - ☐ 30
29	1127 122 6800	1	"L" - ☐ 30
30	4203 122 3600	1	
31	1114 121 7800	1	
32	1122 121 7700	1	
33	1120 121 5600	1	Ø 0,56
35	4203 121 2700	2	
	1127 007 1062	1	☐ 1, 3, 8, 9, 12, 13

N	03 /09
MIW 2	



Rep. Ind. N° Bild-Nr	Code Part. Nb Teile-Nr	Nb Qty St.Zahl	
2	1129 890 3401	1	
3	0000 890 2300	1	
4	0000 891 0801	1	
7	0812 370 1000	1	T 27 x 120 x 70
10	GAW (ST)		13 x 23